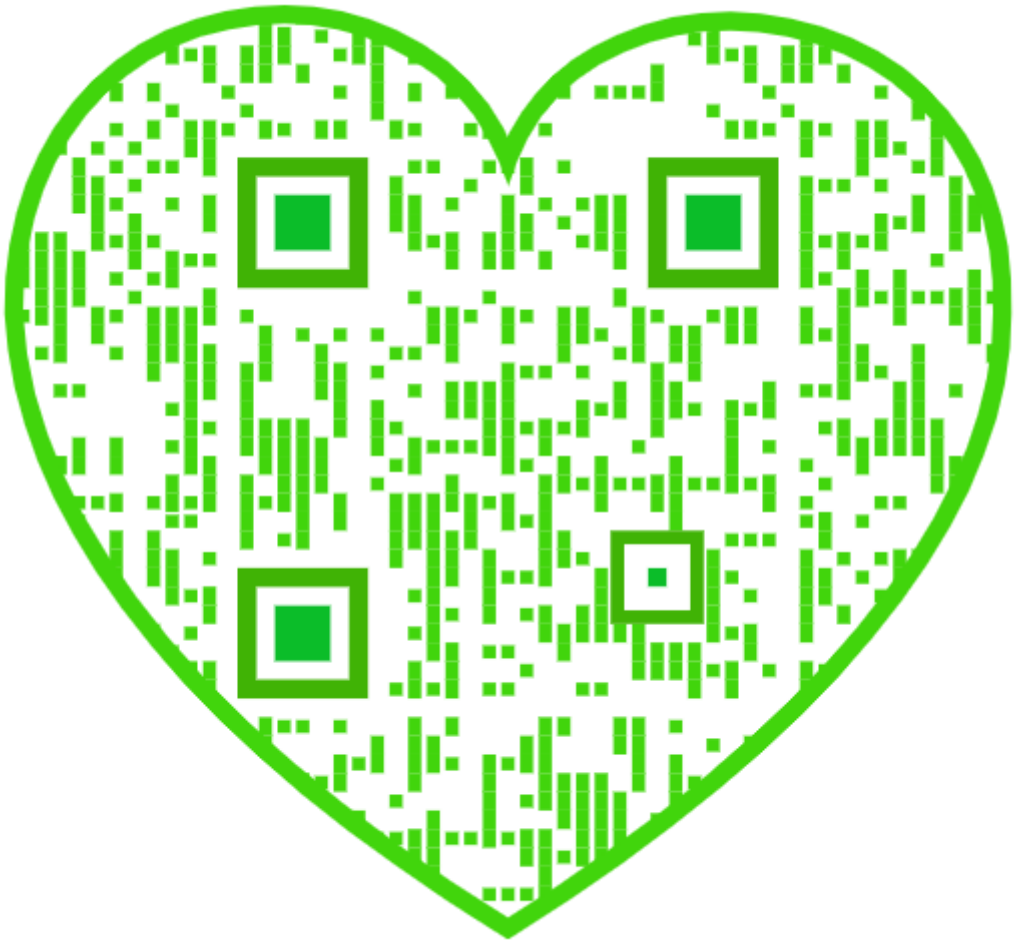

HOUSEHOLD SEWING

WITH

HOME DRESSMAKING

DOMESTIC SCIENCE MANUALS

HOUSEHOLD SEWING

WITH

HOME DRESSMAKING

BY

BERTHA BANNER

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PREFACE.

WE have every reason to believe that this Manual of Household Sewing and Home Dressmaking will supply a much-felt want, and be welcomed as a valuable addition to the Scheme of Domestic Science Education. The experiment, suggested by a visit to Karlsruhe, of making "mending, patching, and darning" a branch of continued, and of Technical Education for Women, in England, has proved a complete success, and we trust will aid the "Maker of the Home" in all classes of society.

Many complaints have come from working men that their wives and daughters could neither mend nor patch, and *that there was nowhere to send them to learn.* Now that reproach is to a very great extent wiped away, and both Afternoon and Evening Technical Classes for Women offer opportunities, at a very small cost, to any wishing to learn. Such a Manual as this will be useful not only to Teachers, but equally so to learners anxious to make good use of the knowledge obtained from the lessons given in the classes.

FANNY L. CALDER.

49 CANNING STREET,
LIVERPOOL, *October*, 1897.

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GLOSSARY.

The practical application of the following words, together with the divisions of a tape measure, should be thoroughly understood before attempting to study the contents of this book.

I. Angle.	A corner. The space enclosed by two lines meeting at a point.
II. Bias.	Cut on the cross. Slanting.
III. Circular.	Round.
IV. Diameter.	A line passing through the centre of a circle to join the outside edges or circumference. Literally, the greatest length or width in a round figure.
V. Diagonal.	Slanting. A slanting line drawn from the opposite corners of a square to divide it into two triangles.
VI. Horizontal.	Straight with the horizon. Used to describe a line drawn across from side to side.
VII. Hexagon.	A shape or figure having six sides.
VIII. Oblong.	A figure having four straight sides, two of which are long and two short.
IX. Parallel.	Running in the same direction. Used to describe two lines equally distant all the way from one another, and which will never join however far they may be drawn.
X. Perpendicular.	A straight line drawn down in the opposite direction to a horizontal one.
XI. Right Angle.	An angle formed by the letter T or at the corner of a square. A perpendicular line falling on to a horizontal in such a manner as to make the spaces at each side equal.
XII. Rhomboid.	A four-sided figure somewhat resembling an oblong, but its two opposite sides, though equal in length, are not exactly opposite (as in an oblong), so that the two end lines slant both the same way.
XIII. Triangle.	A three-cornered figure. A figure having three sides enclosing three angles.
XIV. Vertical.	An upright line.
XV. Warp.	The name of the threads of any material which run the same way as the selvedge.
XVI. Weft or Woof.	The name of the threads of any material which run across in the opposite direction to the selvedge.

HOUSEHOLD SEWING WITH HOME DRESSMAKING.

CHAPTER I.

STITCHES.

THE stitches here mentioned only include what may conveniently be termed "domestic" stitches, consisting of those usually required for ordinary household sewing. Decorative art embroidery, ecclesiastical needlework, lace-making, etc., all belong to the highest branches of sewing, and have all been (more or less) developed from the primary stitches, the link between these being supplied in drawn-thread work and white embroidery. With regard to the primary stitches, it is almost impossible to distinguish between those belonging to plain sewing and those required for dressmaking, as many of them are used simultaneously for both kinds of work; there is, however, a distinct method of applying them to different materials.

The first necessity of all good sewing is strength in order to resist the strain in wear and during washing; neatness naturally is also an important addition. To ensure those points, all plain sewing should have the stitches taken well through the material and showing clearly on both sides, regularity and evenness being

more important than minute, insecure, uneven sewing. With the exception of washing dresses, custom has decreed that all dressmaking sewing should be practically invisible, increased neatness and finish being the result. Owing to the thickness and elasticity of woollen goods, they require very much larger stitches than cotton fabrics, and for parts where there is no very great strain, slip stitching, back stitching, and running are much used. Knots at the end of the cotton are only allowable in plain sewing for tacking; in dressmaking, however, it is frequently wiser to employ them, because the fastening off of the thread is apt to draw and pucker the soft woolly materials, but they must always be placed underneath, and not allowed to be seen. When the sewing is completed, a few stitches are usually worked backwards to secure it firmly, and the end of the cotton, if possible, placed under a fold or hem. The remaining thread is then cut off with a pair of scissors, and not broken, for fear of loosening the fastening off stitches.

The old-fashioned plan of sewing on the first finger of the left hand is being rapidly superseded by the more rational method of sewing between the first and second fingers. This involves the work being held between the thumb and first finger in front and the second and third fingers behind, with sufficient space left between the first and second fingers to allow room for the easy movement of the needle in making the stitches. Certain stitches, of course, require special methods of holding, and these are dealt with separately, under the working of each. The thimble is placed on the second finger of the right hand, and the needle held with the thumb and first finger, with the eye resting against the thimble; any portion of the thimble may be used, but the part close to the top on

the side nearest to the first finger is usually considered the most convenient. When the stitch is being drawn through, the cotton should be drawn up towards the right shoulder, either over or under the third or fourth finger. The difficulties of each stitch will be greatly lessened if at the beginning they are learnt and practised on single thread canvas. To thread a needle, hold it in the left hand against the chest, bend the head downwards, take the cotton in the right hand, and place the end through the eye of the needle. By putting the hands and head in this position it will be found much easier to thread the needle. The following three divisions of stitches comprise most of those required for plain sewing and dressmaking :—

1. Plain.

(1) Running.
(2) Stitching.
(3) Back Stitching.
(4) Seaming.
(5) Hemming.
(6) Herringbone.
(7) Gathering.
(8) Whipping.
(9) Old German Seam.

2. Ornamental.

(1) Feather and Coral Stitches.
(2) Chain Stitch.
(3) Cross Stitch.
(4) Buttonholing.
(5) Embroidery and Outlining.
(6) Hem Stitching and Drawn-thread Work.
(7) Knotting or Seeding.
(8) Honeycombing.
(9) Smocking.

3. Dressmaking.

(1) Tacking and Baisting.
(2) Overcasting.
(3) Slip Stitching.
(4) Back Hemming.
(5) Shirring and Gauging.
(6) Biassing.
(7) Fan of Stitches.

Plain.

Running.—This is undoubtedly the simplest of all stitches, and so should be the first one learnt. With

Fig. 1—Striking.

children, the first point in learning to sew is to gain sufficient power to put the needle into the material, in order to take up a certain amount on the needle and then to draw it through, and until they have been taught

to control their fingers even to this small amount, all further sewing is impossible. But when the fingers are once strong enough to draw the needle through and to hold the work somewhat in the right position, then the training of the eye to sew in a straight line may be begun.

Striking a line by a thread on a piece of coarse soft calico is naturally the simplest method, and the child should practise on this until she is able to keep the stitches tolerably well on the raised line; and then, when both the hands and eye are so far under control, the actual size and construction of the stitches may be safely taught.

The German method of "striking" the calico with a pin instead of drawing threads out or creasing the seams by hand is very simple, and saves much labour. The method is as follows: Hold the left hand above the material, taking a small portion near to the place for striking between the thumb and first finger; place a moderate sized pin between the thumb and first finger of the right hand, draw it *gently* along one thread towards the worker *underneath* the material, and the result will be a raised line on which the sewing may be done.

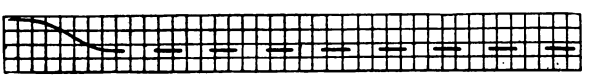


FIG. 2—Running.

The rule for a running stitch is that the amount taken up on the needle should correspond exactly to the space left or passed over between each of these amounts, taking up two threads and passing over two being the

common regulation, and for very fine materials increasing the threads to three or even four. With regard to running on woollen, twilled, or materials cut on the bias, the threads, of course, cannot be counted; hence the necessity for training the eye sufficiently well to be able to gauge successfully the distances between and size of the stitches. In actual practice, when the running has to be carried through two thicknesses of material, or through close woollen fabrics, it has been found inexpedient to adhere strictly to the general rule, as it frequently makes a smaller stitch on the under side; in such cases, therefore, it is better to take up a little more material than is passed over. Running is worked in a straight line from the right hand to the left; it is used chiefly for tucks and seams, and for certain parts of dressmaking where light sewing is required.

Stitching.—Machine stitches represent this stitch as far as the right side is concerned, but they are totally dissimilar on the wrong side.

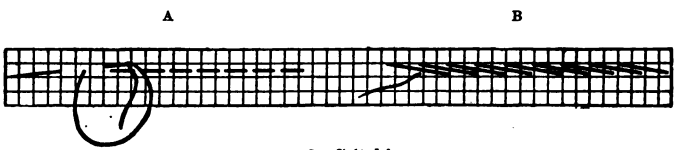


FIG. 3—Stitching.
A, Right side; B, Wrong side.

It is frequently called back stitching, because the needle is taken backwards in making each stitch, but as it leads to endless confusion between this and back stitching proper, it is wiser to keep to the first name. The stitch is worked in a straight line, taking four threads upon the needle, two being taken backwards away from the worker and two forwards, in front of where the cotton was originally brought out.

The needle, when taking the two threads back, must be put into exactly the same thread as the last stitch, so as to leave no threads between; the cotton is kept either entirely to the right or entirely to the left of the needle to prevent splitting the stitches on the wrong side, and the stitches on the top should be uniform in size and tightness. The stitch is invariably worked on the right side of doubled material, towards the worker, and is exceedingly useful where strength is required. It is much used for joining seams, strengthening and ornamenting bands, sewing on buttons, and sometimes for tucks and setting on tapes. The cotton may be finished and joined in various ways; it is most usual to carry the old thread to the wrong side and run it through the last few stitches, then bring the new thread up to the required distance from the last stitch (generally two threads) with the end slipped between the fold of the part about to be stitched. Where the stitching is only required for ornament, a thread may be drawn out from the material, which will make the sewing easier, but when required for strength, the thread should not be drawn but raised by striking or creasing.

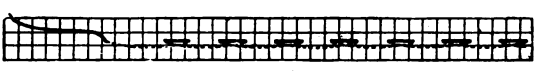


FIG. 4—Back Stitching.

Back Stitching.—This is also known as half-stitching and half-back-stitching, but for convenience the first name is adopted. The needle in working is carried back two threads and forward four, making in all six threads on the needle. This will leave a space of two threads

between each stitch on the right side; in other words, the needle is carried back half-way towards the last stitch and brought forward twice this distance. It is more quickly worked than stitching, and is much used in dressmaking. In all other points it is worked like stitching.

Seaming.—Many people call this stitch sewing and top sewing, because it is the method by which two pieces of material are oversewn together to form a seam. For example, selvedges are sewn together in gores and in making pillowcases, and, used in conjunction with a fell, it forms the side seams of many undergarments. The

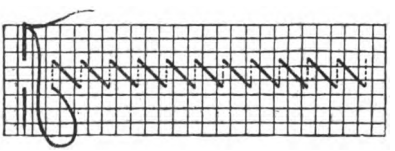


FIG. 5—Seaming.

stitch is worked on the right side, and is one of the strongest used in plain needlework. In shape it forms a true diagonal stitch on the right and a straight one on the wrong side; it is worked from right to left, and on canvas usually covers a square of two threads as follows:—Begin at the bottom right-hand side of the square and carry the cotton up and across it diagonally; then take up the threads which form the left side of the square, with the needle pointed towards the worker. In seaming the needle forms exactly a right angle to the join, that is, pointing direct to the worker; if worked at any other angle it will cause one side of the material to pucker. The work is held in a somewhat different

manner to the former stitches, and, except in the case of beginners, there is no need to tack the two pieces, but only to pin the edges together occasionally.

To hold work for seaming, first bring the left hand opposite the chest, raise the right hand and elbow to the same level, then lay the two edges to be joined evenly along the front of the left first finger, and hold it securely with the thumb. *On no account* allow the sewing to be worked with the material *over* the first finger, as it causes the upper portion to pucker; and for the same reason, holding it round the point of the fingers is not advisable. Sufficient material must be held between the fork of the thumb and first finger to keep it firm, and the remainder steadied with the other unemployed fingers; when commencing, allow the end of the thread to lie along the top of the seam, and sew it over for about half an inch. For joining, allow both the ends to lie in the same direction on the top of the seam, previously taking half a stitch with each so as to bring them both to the centre of the joins, and then work a few stitches over them. When the seaming is finished the seam should be flattened with a presser or thumb nail.

Hemming.—A hem is a double fold of material used to protect raw edges; the width when finished varies according to taste, but the first fold rarely diverges from one-eighth to one-fourth of an inch. The stitch employed to secure a hem is called hemming, and is one of the most difficult in plain sewing. Straightness, regularity and right slant are its most important points, and should be aimed at rather than extreme fineness. The stitch forms a V, the slant on the right-hand side appearing on the wrong side, and the corresponding half on the left being taken to the right side through the material and edge

of the hem to the wrong. The slope for the V varies slightly, and many people determine it by putting so many stitches to the inch, say eight to twelve for ordinary calico and sixteen to eighteen for fine muslin. It is worked on the wrong side from right to left; every stitch

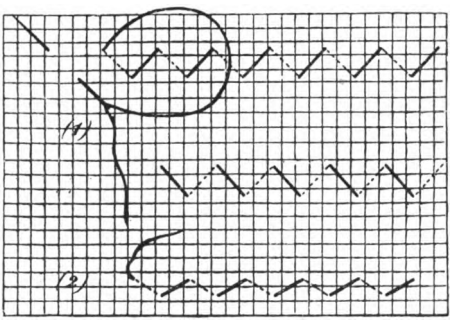


FIG. 6—Hemming.
(1) { A, Wrong side.
B, Right side.
(2) Single thread hemming.

should show clearly through on the right side; splitting the threads and puckering must be carefully avoided. In commencing and joining the cotton, the ends are tucked away beneath the fold of the hem, and the work is held as for stitching or running.

Herringbone.—Owing to the thickness of flannel, this special stitch is employed to protect the raw edges instead of turning them in as for ordinary hems; also being a very loose stitch, it does not draw or pucker the woolly fabric and allows for shrinkage in washing. The material is held in the usual manner and worked away from the chest. In width the stitch generally covers four threads, with two threads taken up alternately on each side.

When working, the needle should point towards the worker; the bottom of the stitch or threads taken up is brought in a direct line with the top of the preceding one on the other side, forming a cross with the cotton. On the right side it appears like two rows of running, with four threads between, each row having the alternate thread

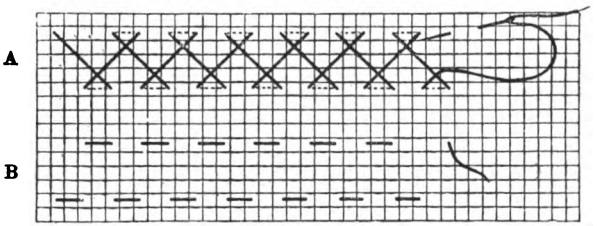


FIG. 7—Herringbone Stitch.
A, Wrong side; B, Right side.

taken and passed over. The lower side of the stitch should come exactly under the raw edge of the folded material, the upper portion being taken right through the doubled thicknesses of the hem. For joining the cotton, a back stitch is taken on the wrong side, or else the ends slipped between the folds.

Gathering.—Gathering is a stitch used to draw together a portion of material which requires to be

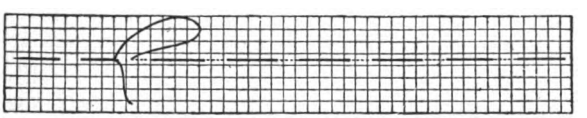


FIG. 8—Gathering.

placed into a smaller space; this is necessary to give ease and looseness to certain parts of garments, for the

sake of freedom as well as for gracefulness of movement. As a stitch it closely resembles running, only the amount of material taken up on the needle should only be half the quantity of that passed over, taking up two threads and passing four, being the rule for average materials. It is always worked on the right side, in order to facilitate the after stroking necessary before putting on a band, and is generally put about one-quarter of an inch from the edge of the material. Gathering is worked in a straight line from right to left, the place for the sewing being marked by striking with a pin when the material is on the straight, and by creasing when it is cut on the cross. In order to place the gathers evenly in the band, the half and quarters of the material should be marked before gathering.

Whipping or Whip Stitch.—This is a variety of gathering used chiefly for frills. When completed it presents somewhat the appearance of a whipcord, hence probably its name; owing to the cheap ready-made frillings of the day, it is not now in such general use as formerly. The frills for underclothing are frequently made of cambric or nainsook, one-quarter of a yard being sufficient to trim one nightdress; besides being economical to buy, it will also wash and wear well. The material for whipping is cut the weft way, because it rolls more easily, and the outer edge is hemmed or hem-stitched. The inner edge, that is, the one sewn on the garment, is rolled over on to the wrong side with the left thumb and first finger, and the roll should be as small and fine as possible. The cotton is brought over the roll from the wrong side with a long slanting stitch, and then through from the right side under the roll to the wrong with a short slanting stitch. No very definite rule can be given for the size of this whip stitch, as it depends more or less upon the

thickness of the material and the amount allowed for fulness; but usually the long stitch is about four times the length of the shorter one, and the average amount of

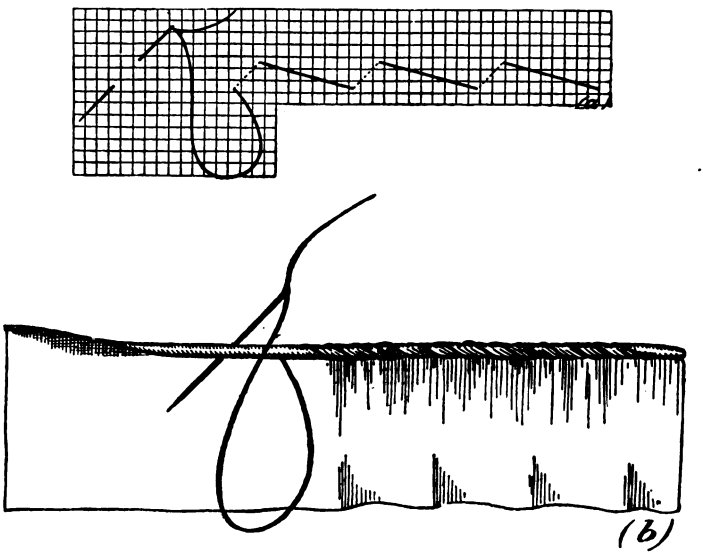


FIG. 9—Whipping.
(*a*) Stitch; (*b*) Whipped hem.

material allowed for fulness is twice the required length of the frill. The frill is seamed to the band with the stitches taken as far as possible over the whipping.

Old German Seam.—This stitch is very little used and consequently is not well known. It is a method of joining two selvedges together, and because of its extreme flatness is often employed in turning sheets. The two selvedges in working are placed edge to edge over the left forefinger with the right side uppermost.

It is worked like herringbone stitch away from the worker; the needle is placed under each selvedge alternately, and taken two or three threads deep through to the right side in a slanting direction, pointing respectively

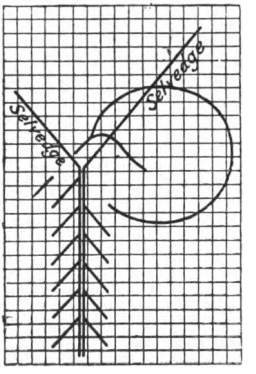


FIG. 10—Old German Seam.

to the right and left thumbs. When finished the two selvedges should exactly meet and the cotton cross from side to side between them. This stitch is sometimes used for pillowcases, gores in undergarments, and joins in trimmings such as muslin frills, embroideries, etc.; it is also sometimes called "fine drawing".

ORNAMENTAL.

Coral, Feather or Tree Stitch.—These names are no doubt derived from the similarity of the stitch to the three things. It makes an exceedingly pretty finish in all kinds of sewing, and is much to be recommended for bands instead of stitching, as the working necessitates so much less strain on the eye. It is usually worked in crochet or embroidery cotton on cotton fabrics, and in

silk, wool or flax thread on woollen ones. The stitch is worked on the right side of the material, towards the worker, the needle being taken alternately on the right and left sides of the pattern, and the cotton from the last stitch always carried *under* the needle so as to form a loop stitch. The number of threads taken up for each stitch varies according to the kind of material; for

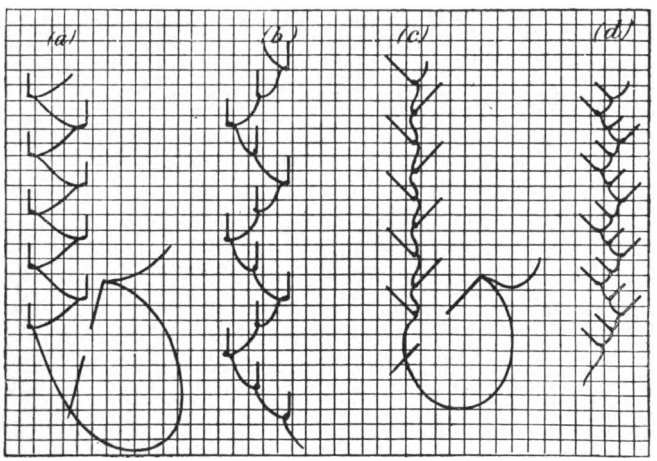


FIG. 11—Feather Stitches.
(*a*) Single straight; (*b*) Double straight; (*c*) Single slanted; (*d*) Double slanted.

working on canvas two is the usual number allowed, and the rule of missing two between each stitch so as to bring the top of the one stitch in a direct line with the bottom of the preceding one is the one generally followed. When working on textiles, however, it is much more practical to gauge the distances with the eye, because in some fabrics counting the threads would be utterly

impossible, and it certainly renders the labour more tedious. The patterns may be varied by taking a diagonal instead of a straight stitch, and also by making two, three or even four stitches on each side. Many authorities affirm that the word coral should be applied only when the stitch is taken straight; others again say that feather stitch proper must have two or more stitches on each side, and that when only one is taken, whether straight or diagonal, it should be called coral stitch. Whichever was originally correct, all the different varieties are universally called feather stitch, and the name tree stitch is almost entirely obsolete.

Chain Stitch.—Chain stitch is sometimes used for ornamental feather stitching, but being much narrower and closer, it is not nearly so effective. In working, bring the cotton through to the right side, put the needle back into exactly the same place, and take up two or more threads, towards the worker; then carry the cotton

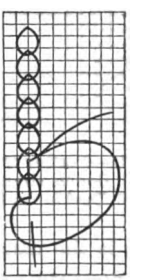


FIG. 12—Chain Stitch.

from the left side under the needle to the right, draw the needle through, and a loop stitch will be the result. For every new stitch the needle must be put inside the loop into exactly the same hole from which the cotton was

drawn out, and brought forward the required number of threads outside the loop, with the cotton drawn underneath. When finished it appears very like a crochet chain stitch; chain-stitch machines also represent it very accurately. It is worked in silk, crochet or embroidery cotton, and is frequently used for marking linen.

Cross Stitch.—In plain needlework this stitch is almost exclusively used for marking, and in dressmaking as an ornamental method of sewing in waistbands. On the right side it represents a series of diagonal crosses, and on the wrong horizontal lines of stitching. Some would advocate vertical lines on the back or wrong side,

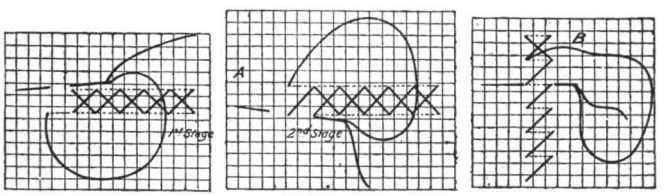


FIG. 13—Cross Stitching.
A, Horizontal line; B, Upright line.

but in continental schools, where marking is brought to much greater perfection, and elaborate cross-stitch patterns much more commonly seen, the former method is adopted, as it is considered easier and more satisfactory. The stitches when finished must all cross in the same direction, the most usual way being to slant the upper half of the stitch from the top left-hand corner down to the bottom right-hand one; the wrong side also should be quite neat, and this will encourage the economical use of the cotton. The process of working a straight line of stitches on single thread canvas is as

follows: First, decide the starting point, bring the needle up on to the right side two threads to the left of this place. Secondly, take the needle up and across two threads diagonally to the right. Thirdly, take up two threads from this last point across the canvas to the left. Fourthly, bring the needle down and across two threads diagonally to the right, crossing the centre of the first diagonal thread. Lastly, from this point on the bottom at the right hand take up four threads horizontally to the left, thus bringing the cotton two threads forward beyond the stitch, in order to commence a second one. In patterns and marking, where upright rows of stitches occur, it is usual first to work the entire number to the top with half-stitches, and then to come back over each one to the bottom. Marking is better done in blue or red ingrain cotton, so as to stand washing and boiling.

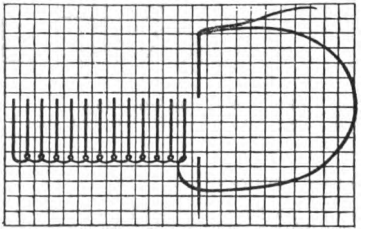


FIG. 14—Buttonholing.

Buttonholing.—This is also known as blanket stitch, because it is coarsely worked at the ends of blankets to protect the raw edges. It is very frequently mistaken for buttonhole stitch, which it very closely resembles, the single purled edge being the only visible difference. It is much used for scalloping, and also sometimes instead of overcasting. The working, which is very simple, is

usually begun at the left side and worked towards the right, but if preferred, it is quite legitimate to follow the contrary direction. The needle is placed in the material with the point towards the worker, and the cotton from the last stitch always brought under it. It is worked in cotton, silk, wool or flourishing thread, according to the nature of the material, and makes a very pretty finish to the edges of frills, bottom of underskirts, etc.

Embroidery and Outline.—These two names are used simultaneously, although they represent two slightly different stitches. They are also known as stem stitch,

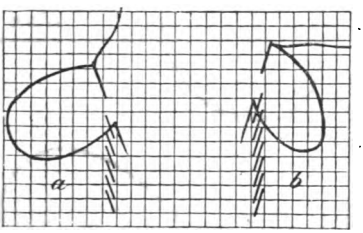


FIG. 15—(*a*) Outline; (*b*) Embroidery.

as they are used for stems in art embroidery. They are both worked away from the worker, with the needle pointing to the chest, with two, three or four threads taken up for each stitch. Each new stitch must exactly join the preceding one, thus making the wrong side appear like a row of stitching. The only difference between embroidery and outline stitching is, that in the former the thread is always kept to the right of the needle, and in the latter always to the left; the stitches when finished appear to slant in a corresponding manner.

Hem Stitching and Drawn-Thread Work.—Hem stitching is a fancy method of stitching hems, and is

much employed for handkerchiefs, aprons, teacloths, etc., as well as for the foundation of many drawn-thread work patterns. It is worked in various ways, the following German method perhaps being the easiest. However,

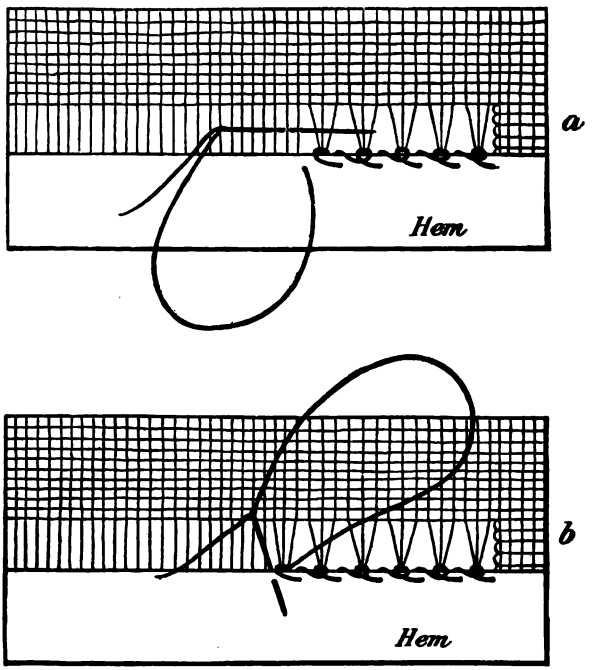


FIG. 16—(*a*) First process; (*b*) Second process.

before the hem stitching can be done the hems require to be turned down, and, if corners occur, they are arranged in one of two ways. The first is as in an ordinary handkerchief where the hem stitching is carried through the hem to the outside edge. In this small pieces of the under-

neath portion of the hem must be cut away (Fig. 17) so that they may be less bulky and easier to work. In the second

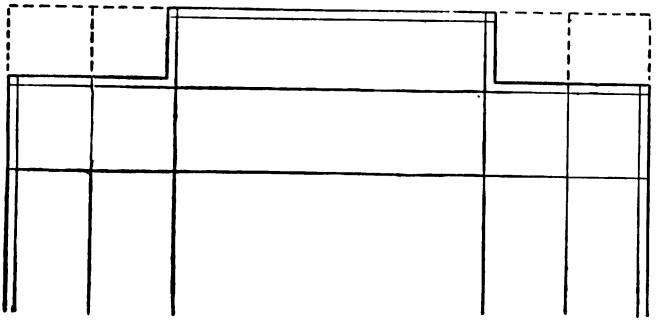


FIG. 17—Corners of Hems.

kind the hem stitching is only taken to the inside of the hem and not through it (Fig. 18). The hem is turned

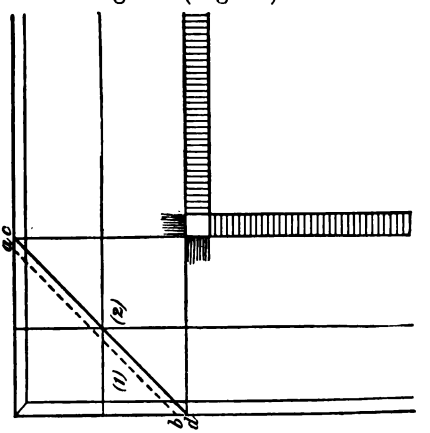


FIG. 18—(1) Portion of corner cut away as far as *a-b*; (2) Fold into two and sew *c d* together.

back on to its wrong side, and the corners sewn together diagonally down the centre; then the superfluous material

is cut away, the seam flattened, and the hem turned back to its normal position, when both sides should lie quite flat, with a slanting seam down the centre of the corner. The number of threads drawn out for hem stitching varies according to the quality of the material, two or three being sufficient for a fairly coarse linen; if the latter kind of corners are used, the threads for drawing out should be cut a little distance (about half an inch) from the corner, and the short ends thus left drawn out and tucked away under the hem. The stitch is then worked on the wrong side, the hem (which is better tacked just to meet the drawn threads) being held towards the worker and resting along the left forefinger and thumb, with the remaining material steadied with the other three fingers. Beginning at the right side, the cotton is first secured by a small hemming stitch, brought round to the left, and the required number of threads taken up on the needle from the left hand to the right. When the needle is drawn through, the cotton will be round the threads; the stitch is completed by drawing the cotton rather tightly and taking an ordinary hemming stitch to the left through the fold of the hem only, just beyond the threads which have been previously drawn together. The number of threads taken together for each stitch generally corresponds to the number originally drawn out, but this again varies according to the nature of the material and the pattern desired.

Drawn-thread work is a combination of hem stitching and embroidery; it consists mainly of three kinds, although it is worked conjointly with almost any fancy stitch. The first class contains all those patterns derived purely from hem stitching and drawn-out threads. The second is known as the darning kind, the patterns being

darned in with one or more coloured cottons, while the third sort introduces endless varieties of lace stitches upon a hem-stitched foundation. Á jour work is very like drawn-thread work, but it is scarcely known in England; in this the threads, instead of being cut and taken out, are drawn together very closely with fine cotton, and thus make a raised pattern surrounded by small holes. When worked on single-thread linen canvas with silk the effect is very striking.

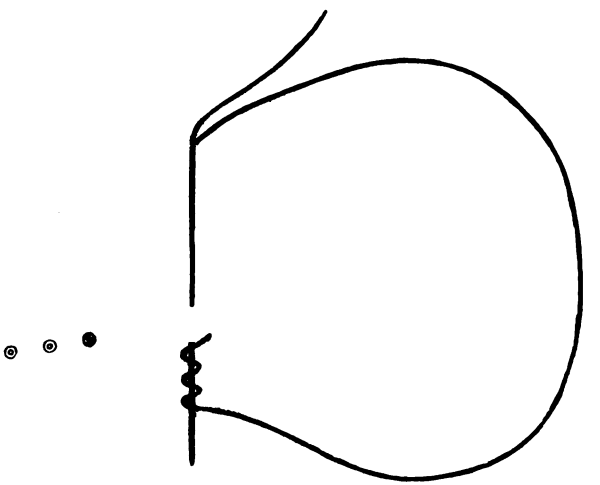
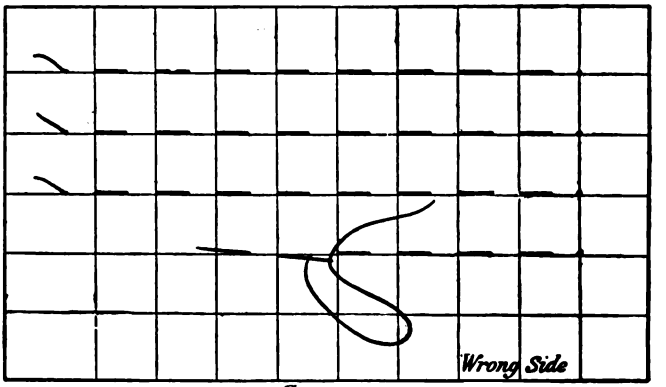
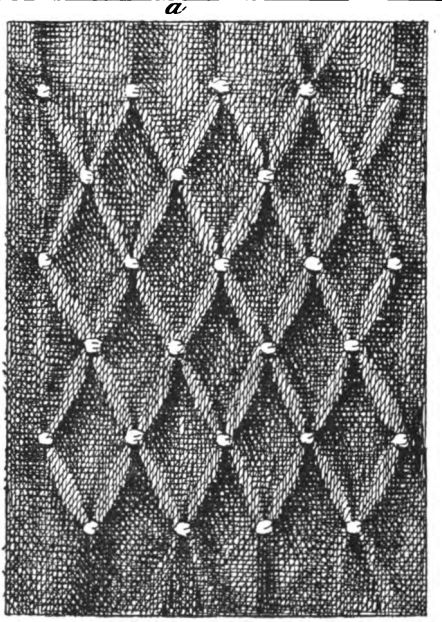


FIG. 19—Knotting or Seeding.

Knotting or Seeding.—In fancy work this raised dot is generally called a French knot; it is frequently used in drawn-thread work, and also sometimes interspersed with feather stitching. To make the knot, bring the cotton through to the right side, and hold it a few inches away from the material in the left hand; next take



a



b

FIG. 20—Honeycombing.
(*a*) Preparation for honeycombing and smocking; (*b*) Honeycombing.

the needle in the right hand and twist it round this small portion of cotton three or four times: it forms a more successful knot if the needle is taken over the cotton to the left and then under to the right. After the three or four twists have been put on the needle, with the cotton still held firmly in the left hand, carry the point of the needle back one or two threads beyond where the cotton was first drawn through. From this point take the needle through to the wrong side while holding the little twists of cotton in their place with the left hand, and pull the underneath cotton quite tight so as to secure the knot firmly on the right side. Another simple knot is made by taking up two threads of the material on the needle, and bringing the end of the cotton from the right hand over the point of the needle to the left; then carrying it under to the right, drawing the needle through and finally taking it back one thread beyond to the wrong side.

Honeycombing.—Honeycombing is an ornamental way of gathering in the fulness of any garment; when worked it represents a series of diamonds joined together by dots, and, as its name suggests, has somewhat the appearance in shape of a piece of honeycomb. The foundation consists of a number of small pleats, and for beginners it is advisable to have some guide for making them, so as to keep them regular and even. The easiest way is to rule the wrong side into half-inch squares with tailor's chalk, and gather each horizontal line with contrasting tacking cotton, taking up and passing over half of each square respectively. These cottons are then drawn up closely and secured with pins; the amount of material allowed for the fulness of the pleats is about twice the amount of honeycombing required when finished.

Two rows of dots, forming half of the diamond, are worked together; it is begun at the top right-hand corner by sewing the first two pleats together two or three times until a sufficiently large dot is made. Then the needle is slipped down the second pleat to the next row, where the second and third pleats are joined together in like manner. The needle is next slipped up to the top row under the third pleat, and the third and fourth pleats sewn together. The whole of the honeycombing continues to be worked in the same way, the second pleat of one stitch always forming the first of the stitch in the following row. When the honeycombing is finished the gathering threads are removed.

Smocking.—Smocking is prepared in exactly the same way as honeycombing, only as the stitches are not so elastic rather more material must be allowed, about two and a half to three times the quantity required when finished. Smocking stitches in themselves are very simple, although they are often worked into elaborate designs, many of which are quaintly picturesque, and consequently of late years they have been greatly in demand for children's frocks, etc.

The word smock was originally given to a kind of shirt or shift worn by women and girls; then combined as smock-frock, with a short, coarse linen over-all or blouse worn by labourers, and these are still used by many working men. Recently it has been further applied to loosely made children's frocks. Outline or embroidery, feather and herringbone stitches are the primary ones used in smocking, and these are worked across the material after it has been gathered as though for honeycombing. Three other stitches, known as rope, cable and basket, belong almost exclusively to smocking; rope

stitch is like alternate outline and embroidery, the thread for the first stitch being taken to the left of the needle, for the next stitch to the right, and so on, changing for each stitch. Cable stitch consists of two rows of rope stitch laid side by side, but the stitches in the second row are reversed so as to bring the embroidery and out-

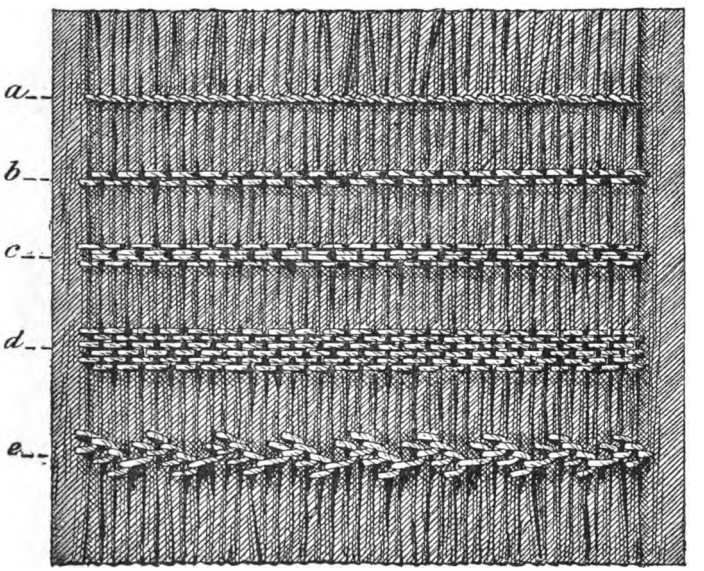


FIG. 21—Smocking.
(*a*) Outline stitch; (*b*) Rope stitch; (*c*) Cable stitch; (*d*) Basket stitch; (*e*) Feather stitch.

line stitches together in the centre, thus forming the links of the chain or cable. Basket stitch is simply a number of rows of rope stitches placed closely together without reversing the order as in cable.

Out of these few stitches many patterns are evolved, squares and diamonds in outline being the commonest.

Dressmaking.

Tacking and Baisting.—These stitches more especially concern dressmaking, although they are often needed in other kinds of sewing. They are both simply means of holding material securely and in its proper position, so as to be easily as well as correctly sewn.

Pins certainly will do this in some cases, but in the majority tacking, that is, coarse running, will be more satisfactory. In dressmaking especially, it may be assumed as a general axiom that tacking is never waste of time, as the sewing afterwards will be more quickly

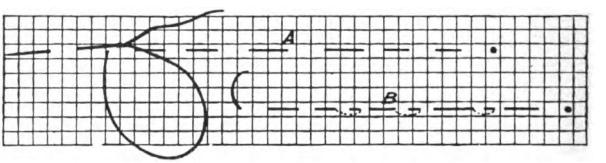


Fig. 22—Tacking.
A, Tacking; B, Tacking with back stitch.

and evenly accomplished, and with very much better results. The size of a tacking stitch varies according to the nature of the place and material to be tacked; no definite rule can therefore be given, and really the judgment of the worker is the best guide. Knots for this kind of sewing are quite allowable, and when not used for joining seams the cotton need not be fastened off, but a short end left, so that the tacking may be quickly and evenly removed. When greater firmness is required an occasional back stitch is used, and these require to be carefully cut before removal, so as to avoid straining the work. Soft cotton of a contrasting colour is advisable, as it is easier to take out and more quickly distinguished

from the ordinary sewing. For thin springy materials, such as crape, alternate long and short stitches hold better. Baisting is a variety of tacking used principally for skirts, or for places where large spaces are to be covered (Fig. 23). The needle is placed across from

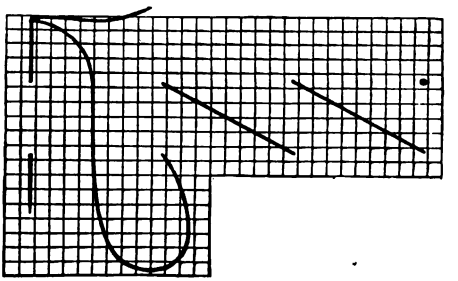


FIG. 23—Baisting.

right to left with as much material upon it as can conveniently be taken; the next stitch is made the same way, either towards or away from the worker as the case necessitates, leaving a long slanted thread between. Baisting should always be done with the material laid flat upon a table.

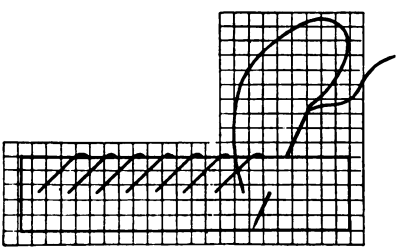


FIG. 24—Overcasting.

Overcasting.—This stitch is seldom used for anything except dressmaking; it is a quick method of protecting

the raw edges of seams, and as a stitch very closely resembles seaming. It differs slightly from seaming, however, in three ways: first, it is worked from left to right; secondly, it is very much larger; and thirdly, the needle is put in slanting a little towards the left. The stitches should be taken about one-sixth of an inch deep and not placed too closely together, eight to an inch being fully enough. The material is held as for seaming, and generally speaking, the quicker it is worked the more regular is the result.

Slip Stitching.—This method of invisible sewing is

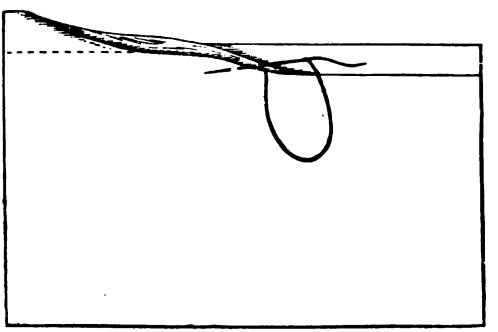


FIG. 25—Slip Stitching.

greatly needed in dressmaking; it is employed very frequently for sewing materials to linings and trimmings on to the dress. It has obtained its name, no doubt, from the fact that the needle in working is slipped between two pieces of material and joins them together by the inner folds of the hem. Running is the principal stitch used; several stitches are taken together, and then the needle brought out at the edge to draw up and tighten the cotton. Slipping requires much practice and light handling of the material, puckering and insecure stitching

being common faults. Milliner's hemming is also a kind of slip stitching, but, strictly speaking, it is not a dressmaking stitch, although frequently used as such. For this the hem is turned down once only and sewn with a sort of herringbone stitch, worked, however, towards the worker instead of away. A small stitch, with the needle pointing towards the chest, is taken through the fold of the hem, and then a second stitch a little way forward on the material just below the hem. The repetition of these will form a succession of V-shaped stitches, and generally speaking, nothing is to be seen on the right side, the stitches only being caught to the back of the material.

Back Hemming.—This is a special kind of hemming

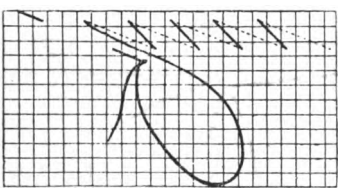


FIG. 26.

for sewing on braids on the bottom of skirts, and is also sometimes used for the facings on account of its strength. On the wrong side it gives the appearance of hemming slanting in the wrong direction, *i.e.*, from left to right. Instead of the needle being brought forward as in hemming to form a V-shaped stitch, it is carried back about half-way to the last stitch, and a long, firm stitch taken forwards through the braid and hem, but of course not through to the right side.

Gauging and Shirring.—These are varieties of gathering used for different purposes in dressmaking.

Gauging is usually employed for drawing up the fulness at the back of skirts, while shirring, known also as fly running, is applied chiefly for trimmings, notably frills. The ordinary gathering stitch is seldom used in dressmaking, a coarse running stitch being more frequently substituted. Where a large quantity of thick material has to be gathered into a small compass, a short stitch

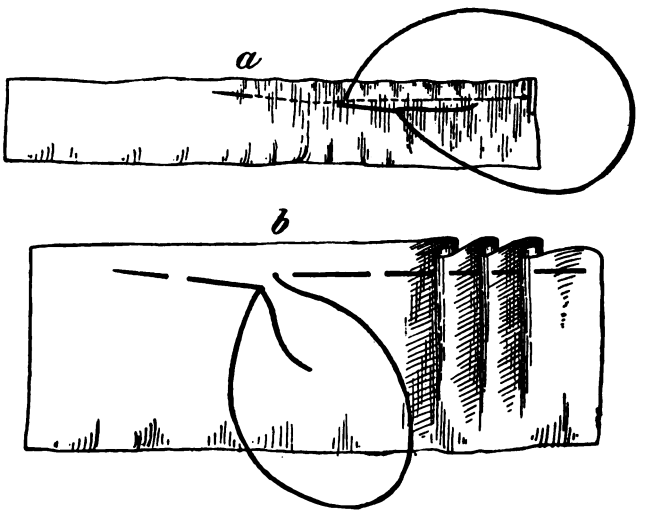


FIG. 27—(*a*) Shirring; (*b*) Gauging.

with a large space in between is the method usually adopted, taking up, for example, a quarter of an inch and passing over one inch, and this is generally what is understood by gauging. It draws the material up into distinct ridges or small pleats, which render it more easily disposed of into a small space. In sewing it into a band only the front part of each pleat is fastened, a sort of double seam stitch being used.

An ordinary single seam stitch is first made joining the centre of a pleat to the band, and then a second upright stitch is taken into the same place so as to make the sewing more secure. The word shirring is very descriptive; it implies a number of very fine running stitches made by shivering or shaking a needle through a soft material. The needle need never be taken out of the material, as the stitches will be pushed over the eye as it becomes over full.

Casing and drawing are terms given to several rows of shirrings with sufficient space between to make little puffs or flutings.

Biassing.—This is a method of securing gauging by means of a fine cord or thick silk. The cord is laid across

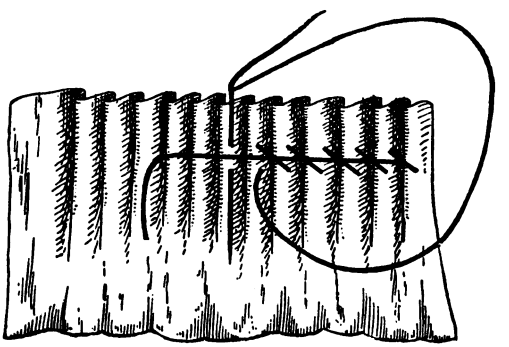


FIG. 28—Biassing.

the pleats on the right side and then secured with a kind of seaming stitch taken into each pleat.

Fan of Stitches.—A fan of stitches is usually employed to neaten and secure the bones of a dress bodice. They are worked at the top of the bone and

consist of a centre stitch with two or three stitches on each side. Each stitch must be begun and finished in

FIG. 29—Fan of Stitches.

the centre so as to make a complete fan on both sides of the bone.

CHAPTER II.

PLAIN SEWING.

Cutting Out and Making Household Articles and Under Garments.—Household sewing requires very little skill in cutting out, and the making is a very simple matter. It includes pillow- and bolster-cases, hemming sheets, tablecloths, towels, etc.

Circular calico is now much used for pillow- and bolster-cases, as it saves joining up the sides; otherwise it must be joined by seaming the two selvedges together on the right side, unless they are inclined to be weak, when it is better to cut them off and make a seam and fell. The only cutting out required in a pillow-case is to tear off the right amount of calico, generally seven-eighths to one yard. The average length for a bolster-case is one and a half yards, and to this extra material must be allowed for the circular piece used at the end. This round end is from ten to twelve inches in diameter, so that as two or three can be cut out of one width of material it is more economical to cut out several bolster-cases together. One end of a pillow-case is joined with a seam and fell, and the other is left open with a hem all round from one to one and a half inches deep. It is fastened by three or four buttons and buttonholes, or tied with the same number of tape strings. The open end of a bolster-case is also hemmed round; usually this hem is

only about half an inch wide, with a running string of tape put through to draw the end up closely together. The round of material for the closed end is hemmed with a very narrow hem; the end of the bolster-case is drawn up with whipping, and then the two seamed together on the wrong side. Sheets and tablecloths only require a hem at each end about half an inch wide; the ends of serviettes also are hemmed, but the hem is made as narrow as possible. These hems are all much better if sewn by hand, as machines draw the cotton rather tight and do not allow sufficient for shrinkage in washing. Hems of tablecloths are sometimes seamed instead of hemmed so as to make them a little stronger. Fringed bedroom towels require to have the edges overcast to prevent them fraying; the towel is held towards the worker between the left thumb and forefinger, and the fringe placed between the second and third fingers, while the edge of the towel is overcast from left to right. Dusters and kitchen towels are hemmed at each end and a loop of tape by which to hang them up attached to one corner.

Under Garments.

Cutting out underclothing is an important branch of sewing, and one well worth cultivating. Economy in this may be encouraged in three distinct ways.

Firstly. By having well-cut paper patterns the size of the garment required; these will prevent cutting at random and probably wasting some material. Paper patterns are better cut without turnings, as the edges can be so much more easily marked for sewing, and also the amount for turnings can be better adapted to suit the material.

Secondly. By using wide material which will almost invariably cut to better advantage, and the difference in the cost is very trifling.

Thirdly. By placing the patterns on the material without wasting space, and if several garments are cut out at the same time much more material may be saved, as one part will fit into another. This involves careful thought and planning for beginners, but will amply repay study.

A few general principles apply to the making of all garments. In the first place, selvedges always run lengthwise, that is, from head to foot, as this is the strongest way of the material, bands being the only exception, because in these the strength is required in the opposite direction. Next, patterns ought always to be pinned to the material, beginning at the centre and working towards the edge, and not at the edge first, as this is apt to pucker them in the centre. Again, jagged and unevenly cut edges should be studiously avoided, as both time and material are wasted in straightening them; even cutting may be encouraged by cutting out on a flat table and opening the scissors as wide as possible each time so as to get a good sweep of material at one cut. The edges of all patterns, except when making woollen garments, can be marked round with a dressmaker's wheel, a single one being preferable, as the turnings may then be regulated to suit the requirements of the material and garment. If a wheel is not procurable, the edges should be marked with pin pricks or pencil, and woollen fabrics may be lined with tailor's chalk. For inexperienced workers turnings are better marked with chalk or pencil, but more advanced cutters will be able to regulate them by the eye while cutting. Clear observation, quickness,

and dexterity are all necessary in cutting out in order to gauge accurately the peculiarities and proportions of individual figures, as well as to adapt them to the material and pattern. Scissors should be held by the thumb and third finger of the right hand, with the under bar supported and guided by the second and third fingers. Large cutting-out scissors sometimes have the lower handle large enough to hold the three last fingers, but the first finger ought always to be reserved for the bar above the handle. Unless cutting two or more pieces together of thick material the blade with the rounded end should be kept on the table while cutting because it will run more easily along; but, with heavy cloths there is always the danger of making the under piece smaller by raising it so much over the scissors. Thus large cutting-out scissors are frequently made with the lower blade pointed.

The principal under garments are chemises, drawers, combinations, nightdresses, shirts, skirts and bodices.

Chemises.—Chemises are cut with or without side gores and with or without sleeves according to the width of the material and the pattern employed. The half-width of a woman's chemise equals seven-eighths of its length, and for children they are equal. They are better if cut without a seam on the shoulder, which necessitates sufficient calico being cut off for both back and front and doubled across so as to let the fold fall on the shoulder. The amount of material for one woman's chemise varies from two to two and a half yards. If the material is wide enough, the neck band may be obtained from the pieces sloped out from the sides; otherwise, it wastes less material if the bands are made the wrong way of the material and a piece torn from the width before the chemise is cut out.

If the sleeves are put in separately, material for these must be allowed, and the facings for the front opening can generally be procured from the piece hollowed out at the neck curve. In making, if cut with gores, these are first sewn on with ordinary or old German seaming; next the sides are joined with a run, stitch, back stitch, or seam and fell, taking care to let the fells fall on to the back portion when it is ready for the bottom hem. If made with gores the bottom may require rounding off towards the sides so as to make it appear even; the depth of the hem is usually from half to one inch. Sleeves cut with a straight outside edge are hemmed like the bottom; separate sleeves are joined with a fell at the sides and felled into the chemise, and those cut with a curved or slanted outside edge are faced with material the same shape or cut on the cross. The facings are generally run on the right side to the edge of the sleeve, turned back and hemmed on the wrong side; sometimes, however, this is reversed, the facing being run on the wrong side, turned back and stitched on the right. The front opening—about six inches—is finished off in various ways; commonly, the right side is turned in about one inch and hemmed, and the left side about half an inch and also hemmed; then at the bottom the wide hem is stitched across the narrow. An alternative and stronger method is to put false hems on each side of the opening, the one on the left side being narrower than that on the right so as not to be seen. These pieces or false hems look much neater if they are sewn on to the wrong side, then turned back on to the right and stitched round. They should be cut wide enough to overlap one another, the first joining being flattened and made to come exactly under the centre of the false hem when finished. The piece on the left side

is cut the length of the opening; that on the right requires to be at least one inch longer with the bottom squared, rounded or pointed, and stitched to the chemise to about half an inch above the opening. The under half is made neat on the wrong side by buttonholing, hemming or seaming it on to the upper piece, and if desired, the whole may be stitched across just above the opening on the right side. The fulness round the neck is gathered or tucked to the required size, and the front left about a couple of inches wider than the back. The length of chemise bands varies according to size of the wearer, and whether the neck is to be made high or low; a medium figure requires a band thirty-six inches long and three-quarters inch wide when finished. When trimmed with embroidery the top of the band is opened and the embroidery inserted before it is put on the chemise; extra turnings to the width of the band will therefore be required. Lace, frilling, edgings, etc., are seamed on to the wrong side of the band. Care must be taken not to carry the gathers or tucks into the shoulder and sleeve part of the neck, as the fulness is all wanted directly in the front and back. The bands are hemmed on in the usual way, then ornamented with feather or fancy stitches, and fastened in front with a button and buttonhole or loop. A second fastening is sometimes put at the centre of the front opening.

Drawers.—Women's, girls' and children's drawers all differ in proportion, but these proportions are generally based on the one length measurement which is taken from the back hip at the waist down to the knee or below it, as worn. The widths for the three grades should be—(1) women, $1\frac{1}{8}$ to $1\frac{1}{4}$ the length; (2) girls, $1\frac{1}{3}$ the length; (3) children, $1\frac{1}{2}$ the length. For tucked drawers one-eighth of the length should be added lengthwise to allow for the

hems and tucks. Roughly calculated, the entire length is divided equally in women's between the body and the leg; for girls, the body takes up about two-thirds of the length, and for children about three-quarters of the length, thus the younger the child the shorter is the leg required. The front waist for women's drawers is hollowed out about one-eighth of the entire length and sloped up to the hip. Frequently, for very stout figures this slope is carried up to the back on the material, thus adding a few inches extra to the length of the back body. If made with circular bands, the depth of this must be deducted from the length *after* the width has been calculated. Children's drawers slope down at the hip, for small sizes about one-eighth, and for larger one-sixth of the entire length, and the front waist in all sizes is hollowed out about one-eighth of the length. For all drawers, the amount hollowed out to make the leg is three-eighths of the width for knickers and about one-eighth of the width more for the tucked drawers. About one-eighth of the width is sloped off the front body up to the waist, and one-sixteenth of the width at the back; this average applies equally to all sizes. In the making of these garments the leg seams are first sewn, with a run, seam, or stitch and fell; sometimes a mantua-maker's hem is used, but it is not nearly strong enough to stand the strain brought to bear on such seams. For knickers, the bottoms are gathered and placed into a band; when hemmed and tucked they must be shortened to the required length, the depth of the hems and tucks being purely a matter of taste.

Children's and girls' drawers have the two legs joined entirely together with a fell, and openings made at the hips about one-third or one-half of the length. These

openings are better when strengthened with false hems put on the same way as at the front opening of a chemise; they are, however, sometimes merely hemmed on either side and strengthened at the bottom with a small gusset or piece of tape. For women, the opening of each leg is hemmed round with a hem of about half an inch in depth, or else faced with a false hem cut on the cross; then these legs are seamed together in front on the wrong side for about five inches below the waist. The waists of all are gathered into bands; women usually prefer circular shaped ones, but straight are always used for children. The band for the latter is divided into two parts, the front being about one inch shorter than the back. Most of the fulness for women is placed at the back and just sufficient in front to give ease and prevent dragging. They are fastened with tapes, or button and buttonholes, the latter being the most suitable for children. One and a half yards of calico will make an average sized pair of women's drawers.

Combinations.—Combinations, as the name suggests, are drawers and chemises combined in one garment. An average sized combination requires two and a half yards of calico, so that they are more economical than two separate garments, and although more difficult to cut out and make there is less sewing in them, consequently they can be more quickly done. The length measurement is usually the only one required, and this is taken from the shoulder to well below the knee in front. The average width is seven-eighths of the length, but stout figures will require them to be equal. Various patterns and shapes are used, which must be made up according to their own special requirements. The upper part is usually treated like a chemise, and the lower as a pair of

drawers. There is one precaution very necessary, and that is to insert a small shaped band across the back where the body joins the top of the legs. This, generally speaking, is the weak spot in all patterns, and needs strengthening, as the strain here in wear is very great. The front is generally finished off with false hems cut to fit the garment, but this is again subject to variations according to the nature of the pattern.

Nightdresses.—The making of nightdresses is somewhat dissimilar to other women's garments, the usual rule of sewing the side seams first being set aside, and the order of shirtmaking more closely followed. The most common shapes are either with a tucked or gathered front and a yoke at the back, or with a yoke back and front. The half-width of the skirt at the bottom is about three-quarters to seven-eighths of its entire length, but all other calculations should be regulated by the style of the garment and the proportions of the figure. In making, the front opening is the first part to be done, and this is usually finished like a chemise; the tucks are next made and the whole front as nearly finished as possible before attempting to put the nightdress together in any way. The front neck is curved after the tucks are made and overcast round to prevent it stretching. Next, the yoke is put on the back, with a sufficient material (about two inches) left free on either side to allow for curving out at the armhole, and then the shoulders joined together. The making of the remainder of a nightdress is comparatively easy; it includes sewing the side seams and the hem round the bottom, which are done like those of chemises, and making and putting in the sleeves and neckband. The sleeves and neckband are usually trimmed

to match the front; instead of the latter a turned-down collar is frequently substituted.

Shirts.—Shirts are made in the same manner as nightdresses, *viz.*, first the fronts, followed by the yoke and shoulders, then the side seams, collar and sleeves. The only exception is, that the bottom hems are sometimes done before putting the shirt together, which in a nightdress would be impossible, because the side seams are joined all the way down; in a shirt the side seam is left open at the bottom for six or eight inches, the corners rounded off to the bottom, and the hem carried round from one side to the other. The side seams are finished off by gussets and also the openings of the sleeve seams, unless they have been made with false hems. The size of the intended wearer's neck, chest, back and arm are the primary measurements required for shirts; the length of the front skirt is from two to three inches shorter than the back, and the width about the same amount narrower. The greatest attention should be paid to the fit of the collar, which, in order to sit well, requires the neck curve to be a sort of squared semicircle; in other words, the neck should be cut straight down from the shoulder, about half the distance of the amount to be taken out, and then curved round rather deeply to the front. It is a very common fault to curve directly from the shoulder to the front, and this must be specially guarded against, as it causes the front to wrinkle and sit badly at the neck. Shirts follow the rule of men's clothing and fasten over from left to right, and the opening of the sleeve at the wrist ought to be half the length of the cuff so as to allow the cuff to lie quite flat when being ironed. Sleeves are better if cut with the upper part on the straight and the under only

on the bias, as the straight edge acts as a support and prevents the other part from stretching out of shape. One width of calico the length of the arm will cut two sleeves; fold it into eight lengthwise and then cut across from three-eighths at the top down to five-eighths at the bottom. This will form two sleeves each three-eighths wide at the bottom and five-eighths at the top. Finally, fold the straight and slanting edges together and pare them even at the top and bottom. Three buttonholes are required on the neckband, one in the centre and one at each end; two are put each side of the front, those on the upper and left side being made longitudinally, that is, running the same way as the selvedge, and those on the under and right-hand side across in the opposite direction. The centres of the buttonholes on the right and left of the fronts must exactly meet, and the reason they are made in contrary directions is to prevent the shirt studs falling out.

Cuffs have two or four buttonholes as desired, and dress shirt fronts generally only fasten in one place.

Skirts.—Skirts are of endless variety and material, and may be gored or straight as desired. Flannel skirts are not generally gored, but are made of two and a half or three widths of material joined together. White skirts require three widths of thirty-inch calico, one width for the back, one cut into two gores for the sides, and one shaped for the front. The width of upper skirts round the bottom when finished is from two and a quarter to two and a half yards. All skirts fit more comfortably if placed in circular bands; for cotton washing skirts the fulness is gathered into the bands so as to be ironed more easily, but for thick woollen materials pleats are better, as they lie flatter. Skirt placket holes are made with a broad

hem about one and a half inches wide on the right-hand side, a narrow one about half an inch wide on the opposite side, and the broad one is stitched firmly across the bottom one at the bottom of the opening, thus making a pleat and preventing the placket tearing down. They are fastened with either buttons and buttonholes or tapes.

Bodices.—No definite rules can be given for the cutting out of bodices, as they are usually planned from a dress pattern. Camisoles are loose, partially fitting bodices, with their seams joined with French hems like blouses; tightly fitting bodice seams are usually joined with a run or stitch and fell. The front hems average one inch in width; in cutting out it is advisable to mark the fitting lines, that is, where the bodice exactly meets in front when fitting, with a dressmaker's wheel or pencil, because when the bodice is finished these must be exactly in the centre of each hem. Therefore, in calculating the amount of material for a one-inch hem, one and three-quarter inches beyond the fitting line must be allowed; then when the quarter of an inch is turned in for the first turning of the hem and one inch for the hem itself, the fitting line ought to be half an inch from the edge. The necks are usually finished off with narrow false hems cut on the cross; the bottom of the basque is hemmed as narrow as possible, and if made without sleeves, the armhole is faced like the neck. If sleeves are put in, they are cut out and made like those of chemises; camisoles further require drawing tapes round the neck and waist, the former being run through the neck facing and the latter requiring a narrow band of material or tape put on the wrong side at the waist to form a casing. Five to seven buttons and buttonholes are usually considered sufficient for plain bodices.

CHAPTER III.

SEAMS, BANDS, GUSSETS, TUCKS AND BINDINGS.

SEAMS include all the various methods of joining two pieces of material together, and it is a curious fact that some of them are known as hems, perhaps because they are made by a double fold of material. The principal seams are :—

(1) Seaming.
(2) Sew and Fell.
(3) Run and Fell.
(4) Stitch and Fell.
(5) German Rolled Hem.
(6) French Hem.
(7) German Hemming.
(8) Counter Hemming.
(9) Mantua-maker's Hem.
(10) Dress Seams.
(11) Flannel Seams.

A fell is another name for a double fold, which is hemmed back on to the material to hide the raw edges of the join. Fells occurring each side of a piece of sewing should correspond, and fall or turn on to the back half of the article. The width of the fell should be as narrow as is compatible with strength, one-eighth to one-quarter of an inch being the average, and they ought to be carefully and evenly turned down.

Seaming.—This is the ordinary seaming or sewing stitch applied to join two selvedges. Selvedges are joined thus in pillow-cases and in gores for under garments, but they ought only to be done in this manner when they

are strong and firm. The seaming is worked on the right side, and afterwards flattened with good pressing.

Sew and Fell.—Being one of the strongest seams, it is frequently used for the bias joins which occur at the side of the garment. One side of the material is turned down twice and the other side only once; the double fold is put on the front half of a garment, the first turning being one-eighth to one-sixth of an inch on the

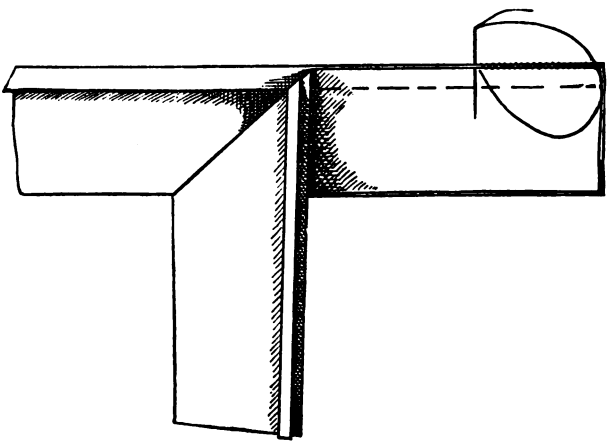


FIG. 30—Sew and Fell.

right side and the second one-sixth to one-quarter of an inch back on to the wrong. The single fold is on the back portion, and is turned on to the wrong side one-eighth to one-sixth of an inch deep. Then the folded edges are placed together on the right side, seamed and well flattened. The double fold forms the fell, and is turned back on the wrong side and hemmed.

Run and Fell.—Where quickness rather than very great strength is required a run and fell will prove very

satisfactory, and for very fine muslin fabrics should always be substituted for a seam and fell. The preparation requires one edge only to be turned in once on to the wrong side, which, in side joins, must be on the

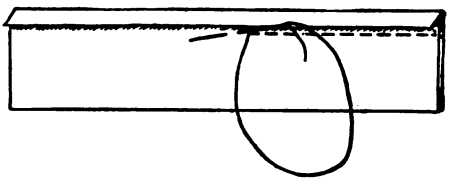


FIG. 31—Run and Fell.

front half; the raw edge of the other half is placed to this fold, and after being well tacked they are run together just inside the raw edge of the piece turned down. It is afterwards finished off with hemming like a seam and fell.

Stitch and Fell.—The method of preparing this seam is identical with the last, the only difference between the

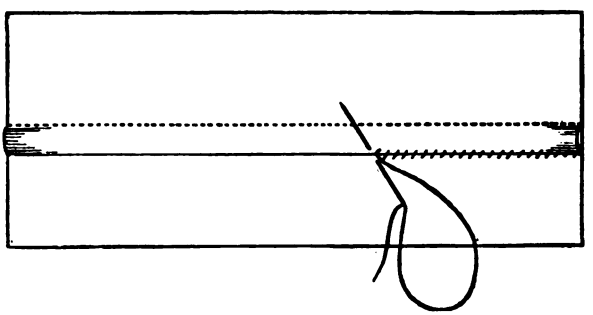


FIG. 32—Stitch and Fell.

two kinds being that stitching or back stitching is substituted for running. Care must be taken, however, to

work on the top part of the fell, so that the right side of the stitching may appear uppermost.

German Rolled Seam.—This is a very clumsy join, and seldom, if ever, used in England. The two raw edges are tacked together on the wrong side with the back half about one-sixth of an inch inside of the front piece. It is next stitched on the front side about half an inch from the edge, or, if quickness rather than great strength be desired, it may be back-stitched or run. The fell, instead of being laid flat and even, is rolled between the thumb and forefinger of the left hand and then hemmed.

French Hem.—The chief feature of this seam is that the raw edges are completely hidden without showing any stitches on the right side, as is the case in ordinary fells. On this account it is used for children's pinafores, unlined blouses, camisole bodices, and similar loose garments; also, on account of its strength, it is universally used for sewing the edges of pockets. The two

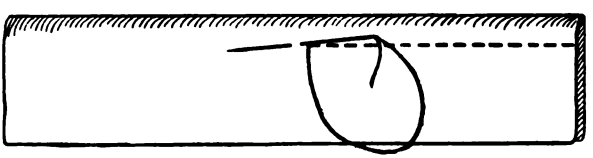


FIG. 33—French Hem.

edges are placed together on the right side and run, stitched or back stitched, about one-eighth or one quarter of an inch from the outside; then they are turned on to the wrong side, the sewing well pressed out, and once more sewn with the same stitch previously employed, sufficiently far down from the folded edge to cover the inside raw material. Its great drawback is that it leaves

a seam like a tuck on the wrong side instead of lying flat, and on this account it is seldom found on closely fitting garments.

German Hemming.—The English work this seam in a slightly different way to the Germans. The latter prepare their work exactly as they would for a run and fell, and then substitute hemming for the running. It is very difficult to keep the hemming quite straight unless the seam is well tacked and a creased line put where the

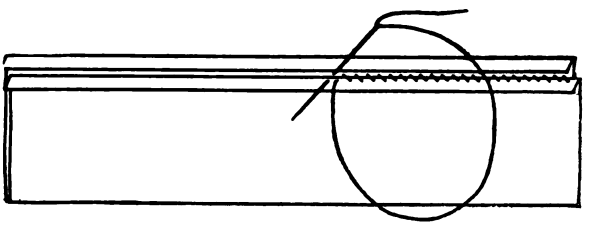


FIG. 34—German Hemming.

sewing is required. The English plan is to turn down both edges about one-sixth of an inch, the upper half on to the right side and the lower half on to the wrong. Next they place the lower fold just to the raw edge of the upper part and hem it down, working the stitch as it were upside down. Finally, the upper fold is turned down and hemmed on to the lower half like an ordinary fell.

Counter Hemming.—As this is a very flat seam it is often placed at the shoulders of various garments, such as chemises, children's pinafores, and infants' shirts; its drawback is that one of its hemmed edges appears on the right side. Both edges of the join are turned in about one-sixth of an inch, one on to the right side and the other on to the wrong, and then the two folds placed one on the

other so that the raw edges just meet and do not overlap. One fold is hemmed down on to the right side and the other on to the wrong. Counter seams are sometimes

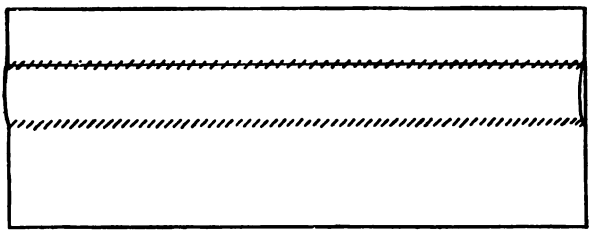


FIG. 35—Counter Hemming.

stitched instead of being hemmed, which is rather more difficult to do as both rows must be worked on the right side.

Mantua-maker's Hem.—In appearance this is very like a French hem, but it is not nearly so strong. It is a very quick and useful seam for thin unlined muslins and silks; the two raw edges are placed one slightly below the other on the wrong side, the upper one turned down once on to the under edge, and then both turned down once again together. This fold is next hemmed down through the double thickness of material, and because this is the only row of sewing it is only suitable for seams where very little strain occurs.

Dress Seams.—Bodice and skirt seams require to be as flat as possible: the two pieces are machined together or else back-stitched by hand, the raw edges pared to the required depth (varying according to the part of the dress), pressed open and overcast, or bound with sarcenet ribbon. For washing dresses the raw edges of the material and lining are sometimes turned in to meet one another, and run or overcast neatly together.

Flannel Seams.—Three distinct variations may be noticed in joining flannel, but the same stitches are employed for all, the differences only occurring in the manner of herringboning the fell. The two pieces are placed evenly with the two right sides together and stitched, back-stitched, or run a quarter to a half-inch from the edge. Owing to the nature of flannel a very close stitch is not wanted, and unless very great strength is required, running with an occasional back stitch is the best method; sometimes, however, this part is machined,

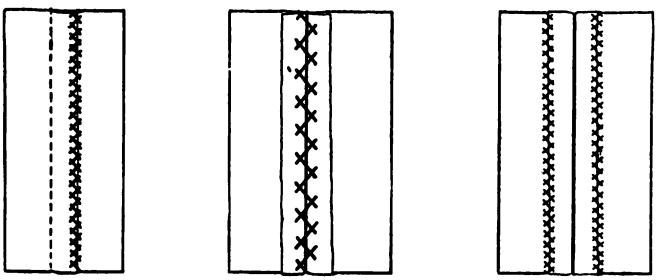


FIG. 36—Flannel Seams.

in which case the tension must be very loose and the stitch fairly large so as not to pucker. The edges are herringboned in three ways. *Firstly*, by turning both edges down together on to the flannel and protecting them with one row of herringboning. *Secondly*, by opening the seam, laying one edge of the flannel on either side and herringboning down the centre of the seam. *Thirdly*, by opening the seam as above and herringboning the raw edges on each side on to the flannel. The first is the usual method for ordinary garments, as it is the strongest; the second is also strong, but, although much flatter, is not so

neat, as it leaves the raw edges unprotected; and the third is very flat and neat, but not so strong, and thus is generally only used for babyclothing.

Bands.—Bands are folds of material into which gathers and pleats are set, and they are further required as supports for certain parts of garments. As strength is of primary importance they should be cut with the selvedge running lengthwise, the average length being about half as much as the material to be gathered, and for pleats rather less than half as they take more material, two and

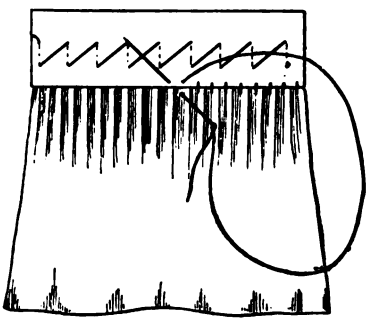


FIG. 37—Band with Gathers Tacked in and partly Hemmed.

a quarter to two and a half times the length of the band being frequently allowed. If possible remove the actual selvedge from the band, because it is much stronger than the surrounding material, consequently is apt to cause puckering when the gathers are set in. The width of a band varies considerably according to its position, and can only be determined by its own special requirements. The making is a very simple matter, and is as follows: Strike the centre of the band lengthwise on to the right side so as to fold it equally in two, and then strike each edge one-sixth of an inch deep on to the wrong side. Turn in also

the ends of the band about one-sixth of an inch, and in order to keep the band smooth and even it is well to tack it together lengthwise a little distance from the fold. The ends of the band are seamed together, but it is wise to leave this until the band is sewn on to the gathers or pleats, and only tack part way down at the beginning, as the fixing will be easier.

Before the band is put on the gathers are stroked to make them lie flat and even. This is done by drawing cotton up moderately tight and securing the end round a pin, which, for convenience, should have the point upwards, and then laying the gathers evenly on the right side in little folds by the help of a pin. Always begin doing this at the left-hand side, and with the pin in the right hand push gently under each gather, holding the gathers between the left thumb and forefinger and draw the pin down so as to crease or fold them into small pleats. Great care must be taken not to scratch the gathers instead of quietly stroking them or the fabric will be weakened; if properly done no sound will be audible. Each gather must be raised by the pin, laid under the thumb and stroked down for about one inch. After the material underneath the gathering-thread is finished, turn the article round and treat the part above in the same manner.

In fixing on the band, first loosen the gathers and pin the quarters under the front half only of the band, so as just to cover the gathering-thread. The pins ought to be put in pointing upwards to the folded edge of the band or it will interfere with the gathers. For beginners it is wise to tack them together, but the stitches must be taken the same way as the pins were placed, forming a sort of baisting stitch. The band is sewn on with a kind of

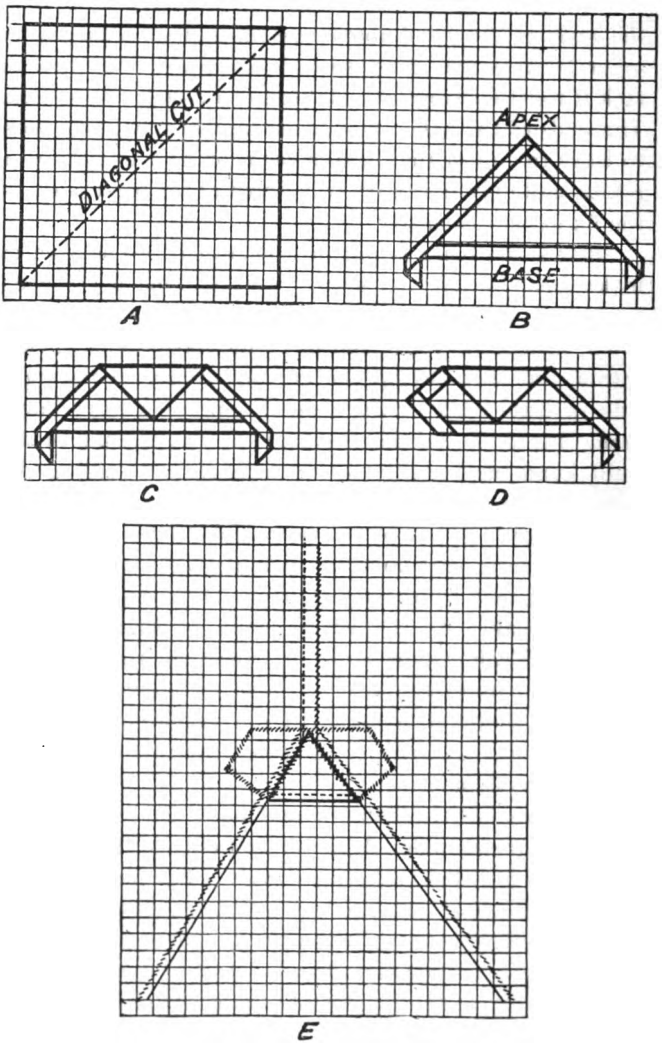


FIG. 38—A, Square for two Gussets; B, Gusset turned down one-sixth of an inch; C, Fold dividing Gusset from Lining; D, Lining cut at one side to form Hexagon; E, Gusset when finished.

hemming, one stitch being taken in each fold, and after the right side is finished the wrong side is hemmed down; this must cover the front hemming, but on no account be carried below, as *no* stitches must be seen on the right side.

Gussets.—A gusset is a wedged-shaped piece of material inserted at openings to prevent seams tearing or splitting open. Much depends upon the nicety of the putting in and finishing off, but when well accomplished they have a peculiar charm to a good needlewoman. Usually they are cut in pairs, because the commonest places requiring them are the sleeves and side seams of shirts, so two exactly similar will be needed for the right and left sides. A square of two or three inches is sufficiently large for such gussets, which is divided diagonally to make two triangular pieces. Each of these triangular pieces forms one gusset; it is turned down all round about one-sixth of an inch on to the wrong side, then the apex or point where the two straight sides meet is turned down to meet the turning on the bias side, known as the base. The triangular piece thus turned down forms the gusset on the right side, and the remainder acts as a sort of lining. This lining may be hemmed back exactly as it stands, or the corners adjoining the base turned back to the corner of the fold dividing it from the gusset proper so as to make a hexagonal or six-sided shape. In sewing a gusset into a garment, place the point at the apex into the corner of the opening at the end of the seam, and seam down on the right side each side of the small triangle, which has been previously divided by a crease from the lining. Without breaking off the cotton, turn to the wrong side and hem the lining neatly all round. The two lower sides of the hexagon, next to the fold of the gusset,

should be hemmed at right angles to the seam, and the two short sides, joining these, parallel to the seam ; the last or bias edge falls naturally on the cross, but care must be taken to see that it covers the end of the garment seam so as to neaten and to protect it. The fell of a seam where a gusset is placed should be cut across so as to allow the hems of the opening to lie quite flat. The fold dividing the gusset from the lining is sometimes stitched across about one-eighth of an inch from the edge to strengthen it and to give finish. Square gussets are sometimes inserted in the shoulders of boys' shirts and nightshirts to give more room at the neck. The square (four to six inches) is turned down all round with a narrow turning, the shoulders opened from the neck almost the length of one side of the square and turned down on to the right side; then two sides of the square are seamed into this opening, with the turnings all on the right side, thus making a triangular gusset. The turned-down edges are next pressed down on to the gusset; the other half of the square is turned over and stitched on to the right side so as to completely cover the first sewing. The diagonal fold of the square is gathered with the remainder of the neck into the neckband. Another kind of square gusset is sometimes inserted in the sleeves of nightdresses and chemises to give greater freedom in moving the arm. Two sides of the square are sewn into the side seams, which, of course, must be opened down the length of the sides of the square, and the other two sides are put in like manner into the seam of the sleeve, giving the effect of a diamond-shaped piece of material inserted under the arm.

Tucks.—Tucks may be described as pleats sewn in a garment, either for ornamental purposes or in order

to shorten or narrow it. The widths vary very much according to taste, as well as to the special needs of the material. They are greatly used to ornament such garments as nightdresses, chemises and babies' robes. For this purpose they are seldom more than a quarter of an inch wide, and in fine muslin materials only about one-eighth of an inch, but for woollen fabrics they are

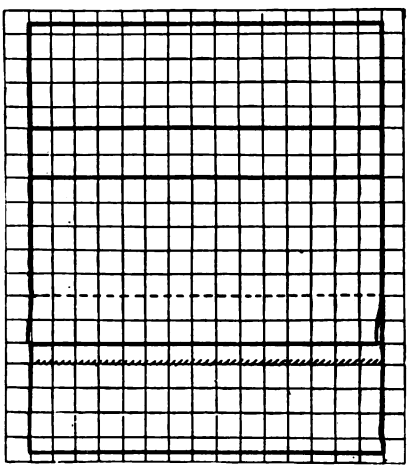


FIG. 39—Tucks.

made much wider, one to one and a half being the average width. Garments which have become too short may be lengthened by joining on more material and hiding the join with a tuck, taking care, of course, to bring the seam in the under fold. When placed lengthwise on garments the folded edge of each tuck should turn to the centre on each side respectively. The material required for one tuck is twice its depth with once that amount to

lie upon ; the space between each tuck may be its whole or half its depth, and sometimes it only just clears the preceding line of sewing. Half the depth of the tuck between each is the general rule except for *very* narrow ones, when it is about the same as the depth of the tuck. Each tuck in making requires two strikings on to the right side, one for the folded edge and one to guide the sewing, which also marks the depth. Therefore, for quarter-inch tucks with one-eighth of an inch between each, the first striking would be placed five-eighths of an inch from the preceding row of stitching, which would allow one-fourth of an inch for the under part of the tuck, one-fourth of an inch for the tuck to lie on, and one-eighth of an inch space; the second striking would be put a quarter of an inch above the first. The material is folded by the first striking, and sewn through the doubled material on the second ; thus when the tuck is finished the sewing will have been done on the upper side, which will add to its appearance. Tucks are sewn most usually with running, but they may also be stitched, back-stitched, or hemmed. Hemming requires to be done on the wrong side, therefore it is easier in this case to put the second striking below the first and to raise it on to the wrong side.

Binding.—Binding is the neatening of a raw edge by covering it with folded tape, ribbon, braid, etc., partly to strengthen and protect it, but also to keep thick materials smooth and flat. Flannel binding is a very thin kind of tape with a silky finish. Galoon and Persian or Paris binding are very similar, and they can all be bought in various widths, half-inch being the commonest. One-third of the depth of the binding is usually put on the right side, and the remaining two-thirds on the wrong,

with the raw edges of the material slipped in between. In woollen fabrics the binding should be very firmly held and the material eased in slightly so as to keep the edges from puckering; also care must be taken not to roll the edge of the material between the binding. The common

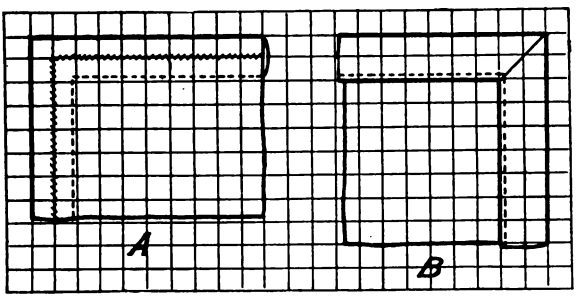


FIG. 40—Binding.
A, Right side; B, Wrong side.

method is to hem the binding on the right side and hem or run it on the wrong. It is, however, sometimes stitched on the right side and hemmed back on the wrong. On no account must the stitches on the right side be taken through the binding on the wrong.

CHAPTER IV.

FASTENINGS.

Buttons and Buttonholes.—Various methods are used for fastening garments, etc., but the most popular is with buttons and buttonholes. These, besides being flat and close, are very firm, and so are especially suitable for dress bodices; they consist of slits in the material which are worked round the edge with a special kind of stitch. They require much practice and careful attention in every detail, also skill in handling the work and a well-trained eye to accomplish them successfully. The stitch should

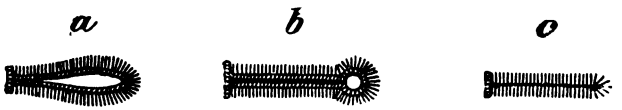


FIG. 41—Buttonholes.

be learnt on canvas or coarse linen without an actual slit prior to being worked on other material. Buttonholes are invariably worked on two or more thicknesses of material so as to be strong, and the ends may be squared or rounded. The most usual way is to round the outside end and square the inner, as the rounded end gives more room for the stem of the buttons and the squared one helps to keep the buttonhole closed; but when worked on biassed material it is perhaps better to square both

ends, as such buttonholes are apt to stretch. It is very important to cut the slit quite straight and even, as it is almost impossible to make jagged and crooked edges into a good buttonhole.

For coarse fabrics which are likely to fray, and also for woollen goods, the slit is protected by a few preliminary stitches before the buttonhole stitch is commenced. The most common way of doing this is to take three or four overcasting stitches on either side of the slit in fine silk or cotton; another favourite plan is to stitch or run each side of the buttonhole before cutting the slit, and a third way much used for biassed buttonholes is to strand each side with twist or thick cotton by carrying two or three threads down each side and fastening them across at either end sufficiently tight to prevent the stitch stretching. Tailors generally have a punching machine for cutting buttonholes, which excavates a small portion of the material at the rounded edge, and they finish it off with an eyelet hole so as to hold the shank of the button. The working of buttonholes on all kinds of materials varies but little; when worked on thick woollen stuffs a somewhat deeper stitch is necessary to get a firm hold, and the cotton or silk with which they are worked should be fairly thick buttonhole twist, *i.e.*, a thick, twisted purse, silk. When worked on calico of medium thickness the stitch is taken four threads deep and worked from left to right, beginning at the squared or inner end. The slit is held along the first finger of the left hand, and on no account must the finger be pushed through the hole, or a rounded and very much stretched buttonhole will be the result. When finished the edges of the slit should lie quite evenly together, also both the inner and outer edges of the button stitch ought to be regular and even;

they are always worked on the right side, and a common fault is to allow the under layer or layers of material to slip away from the upper, and consequently they are not caught in with the sewing. The method of working the actual buttonhole stitch is to place the needle through the slit and take up the amount of material required for its depth ; then, before drawing the needle through, to take the thread from the eye of the needle, carry it over to the left and under the needle to the right. As the needle

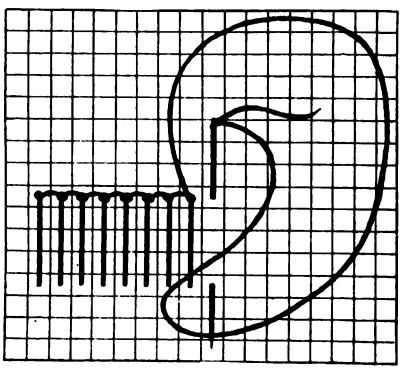


FIG. 42—Buttonhole Stitch.

is drawn through this will form a loop, which must be brought to the raw edge of the slit. Some workers prefer to bring the needle through without twisting the thread round, and, before it is drawn quite closely to, putting the needle under and through the loop thus made ; the effect when completed is exactly the same, but the former is the quicker way.

Buttonhole stitch differs from buttonholing in having a thicker edge, which is generally known as a double purl. Five, seven or nine stitches are used for the

rounded end, an uneven number being chosen so as to bring the centre one exactly even with the slit and with an equal number on either side. If worked with nine stitches it is better merely to use overcasting stitches instead of buttonhole, as there is hardly sufficient space for the purled edge, unless, indeed, the corner has been well punched or the material is soft and capable of being drawn up closely. A bar is worked across the squared end, which, when the buttonhole has been worked four threads deep, will require nine stitches, so as to bring the centre one opposite the slit. Many people prefer these stitches taken four threads deep through the material at right angles to the sides of the buttonhole; with washing fabrics this is perhaps necessary, but a loop bar answers the purpose very well, and has a much neater appearance.

To make this bar, strand the end of the buttonhole three or four times about two threads beyond the beginning of the slit, and then buttonhole these strands across so as to bring the purled edge to touch the side stitches; it is, however, advisable to take the first and last stitches through the material to prevent the loop turning back in the opposite direction during wear. Tailors work their buttonholes from right to left, and bring the thread from the right hand under the needle to the left, but the result when finished is identical; sometimes also they cut a triangular wedge-shaped piece from the corner instead of punching, and then work the buttonhole into a sort of oval shape by placing a fine gimp or cord at the edge of the slit, which is covered by the buttonhole stitch.

Buttons.—In speaking of buttons three distinct classes may be noted. (1) With shanks, as shoe buttons; (2) without shanks but with pierced holes, such as shirt and trouser buttons; (3) without either shanks

or piercings, as ordinary linen buttons. Tailor's buttons are sometimes reckoned as another class; they have a small rounded pad of material at the back of the button for the sewing, but these in reality are only substitutes for metal shanks, so they may easily be included in the first class. A variety of substances are used in the manufacture of buttons, such as metals, bone, glass, jet, mother-of-pearl, and for covered ones cloth, silk and linen.

Buttons are sewn on the right side to a double fold of material to prevent them tearing or pulling away from the fabric; if this does not naturally occur where buttons are

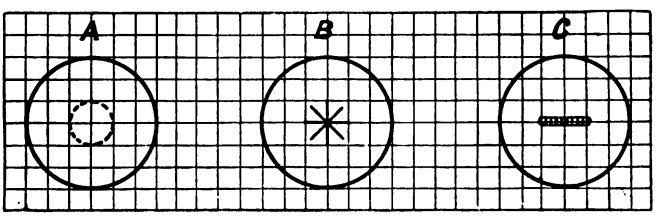


FIG. 43—A, Ring; B, Star; C, Loop.

needed, tape or some substitute is generally placed underneath as a support. Buttons with shanks are very easily sewn on by simply drawing the thread alternately through the shank and material. Buttons without shanks require to be what is called "stemmed". This is done by leaving the thread a little loose while sewing on the button, and then twisting it round the sewing several times between the button and the material before fastening off the cotton. The object of this is to make an artificial stem which will raise the button slightly above the material so as to allow sufficient space for the buttonhole to lie under without straining the sewing. Buttons pierced with two,

three or four holes are sewn by carrying the thread from one hole to the other in lines, triangles, squares or crosses respectively. Linen buttons are sewn on with various devices; the three most usual ways are a ring of stitching, a star of stitches, and one or two loops of buttonholing. The sewing is placed in the centre of the button, and should not cover more than one-third of its diameter; the cotton is fastened at the beginning of the right side of the material just under the button by a few back stitches, and these buttons specially require good stemming, or they will quickly pull off. To fasten off the thread pass the needle through to the wrong side, take one or two back stitches, slip it between the fold, and cut off the cotton closely.

Hooks and Eyes.—Hooks and eyes are made of twisted wire, both black and white, the former being japanned and the latter silvered. As a means of fastening they are not so firm as buttons and buttonholes, but where invisible closings are necessary they are invaluable, be-

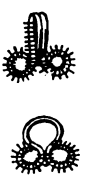


FIG. 44—Hook and Eye.

cause being small and flat and sewn on the wrong side, they are hardly discernible on the right side. Large sized hooks and eyes are used for skirt waistbands, and are known as mantle hooks and eyes, being primarily used for thick cloth jackets and mantles. If possible,

hooks and eyes ought not to be put on washing fabrics, as the action of the water is apt to rust the metal and cause iron-mould stains. In sewing them on strength is the first point to notice, and for this reason they are usually overcast or seamed to the material as closely as possible round the ring of metal made for the purpose. The shank or back of the hook is also sewn in the same way, and the eye has a few stitches taken each side above the rings; sometimes buttonholing is used instead of overcasting, but this, besides being more difficult, is frequently not so secure, as it is not easy to take a firm hold of the material under the rings. When used for fastening dress bodices the edges of the eyes are buttonholed over with silk twist to prevent any of the metal gleaming through and possibly showing on the right side.

Loops.—Loops are used in conjunction with hooks instead of eyes in places where the latter would have to be on the right side. They are also sometimes used with buttons for extremely thin or thick places where

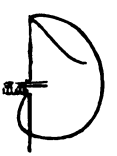


FIG. 45.

it would be impossible to make a buttonhole; such places frequently occur in children's pinafores and dresses.

Those employed for hooks are quite flat, lying on the material; those used for buttons are usually at the edge of the material, and are made sufficiently large for the

buttons to pass through. Both kinds are made by stranding across with three or four threads, the former having the threads drawn close to the material with the strands sufficiently large to hold the hook, the latter with the strands left quite loose so as to go over the button, and the space of the material left between the ends of the strands about equal to the diameter of the button. The strands are buttonholed over, with the stitches put as closely together as possible and carefully fastened off on the wrong side; the purled edge of the buttonholing should come to the outside edge of the loop.

Eyelet Holes.—Eyelets or holes to let in light are small rounded perforations overcast or buttonholed round to prevent them tearing or fraying. Stilettoes, originally a name given to a pointed dagger, are used for making the holes; they consist of a round pencil-like blade of

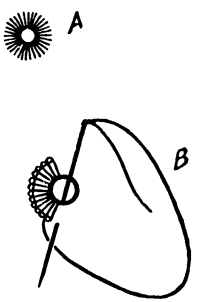


FIG. 46—Eyelet Holes.
A, Overcast; B, Buttonholed.

steel or ivory, and are sometimes placed in handles of fancy metals, mother-of-pearl, etc. The pointed blades of small scissors may be used in place of a stiletto, but there is always the danger of these not making the hole round. Eyelet holes are chiefly used as a dress fastening,

either for hooks or for lacing. If worked with buttonholing the purl edge ought to form a ring on the surrounding material and not fall to the edge of the hole as in a buttonhole.

For hooks the holes are better if merely overcast closely round, as the thicker buttonholed edge is apt to be in the way in fastening. The buttonholed holes are ornamental, and used chiefly for lacing.

Tapes.—Tape, that is, a narrow, ribbon-like fillet or band made of cotton or linen, is employed chiefly in

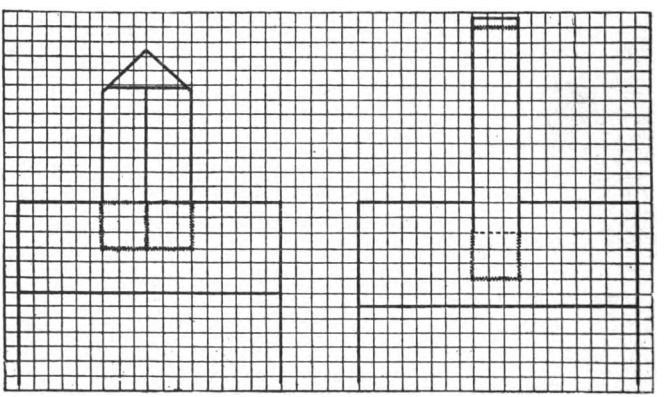


FIG. 47—Tapes.

washing articles, either as a means of fastening or for loops for hanging-up purposes. Tape is to be had in various sizes, from one-eighth of an inch to two inches wide ; narrow ones are frequently used instead of gathers to draw up fulness, because during washing it may be pulled out quite flat and render ironing easier. The ends of tapes, whether for loops or strings, are secured by a square of sewing the size of the width of the tape, and are almost

always placed on the wrong side. In order to make this square, turn down the end of the tape once as narrow as possible, then fold the corner across to the selvedge diagonally, which will give the right size of the square, and crease the square across so as to mark it clearly for sewing. The three outside edges of the square, that is, the two selvedges and the end, are hemmed down on to the material; the fourth side, that is, across the tape parallel to the end, is sewn in various ways; if the tape is being put on to a hem, as for a pillow-case string, it is seamed, stitched or hemmed across. If, again, it forms one fastening of a loop or a string at the end of a band or hem, it is stitched across about two threads from the edge on the right side, or else seamed at the very edge on the right side. For loops it is usual to sew both ends of the tape in two squares side by side, and the two inner sides which will consequently join are seamed together first on the wrong side or fastened across afterwards with small cross stitches. The ends of strings are neatened with a very narrow hem, the raw edges buttonholed over or else cut on the cross.

CHAPTER V.

PATCHING AND DARNING.

Mending.—This art may be roughly divided under two heads—(1) patching, (2) darning. The importance of both methods deserves the fullest consideration, but it should be remembered that good mending greatly depends upon understanding the original rules and methods of making. This is especially the case in repairing all articles of clothing, but is also applicable to household sewing in general.

PATCHING.

Patching is the art of restoring the worn parts of any article by means of inserting better material. Its object is to preserve those parts which, owing to greater strain, have become worn before the remainder, and it is used when the rents or torn places are too large for darning. Articles worn more or less evenly all over should not be patched; the extra material of the patch will prove too strong, and will only strain, if not tear, the remaining parts. Two classes of patches may be noted: the first, perhaps, will be more generally understood under the head of repairing. It includes such mending as necessitates the putting in a new *portion* of a garment, such as collars, cuffs, bands, skirt facings, shirt fronts, etc.

These repairs will be best understood by studying the methods of making the original garment.

The second class of patching refers to the cutting away of worn parts and holes, and actually inserting better material.

Textiles of all kinds will allow of both classes of patching, but care must be taken to see that the patch agrees with the original substance in colour and quality.

New material must be carefully avoided, as being stronger it is apt to tear the article outside the patch. If it is impossible to obtain partially worn pieces for mending, material of much thinner quality should be chosen, and in all cases calico or linen should be washed before using. A good plan in the case of prints and dress materials is to expose them in the sun to fade, but in some cases washing will also be found sufficient. Dresses invariably lose some of the original brightness of colour during wear, so that care in these small details will amply repay the worker, as undoubtedly one of the primary principles of patching is that the repair should be as little visible as possible when completed. Another very important point to consider in inserted patching is, that the warp of both article and patch should run in the same direction; as a general rule the selvedges of all garments run lengthwise, *i.e.*, from head to foot, the reason being that the warp threads are the stronger; where there is no direct means of knowing the position of the selvedge the warp threads may be discovered by pulling the material in different directions, and these threads being stronger will easily be detected as allowing less yielding and stretching. If this method fails there still remains the plan of fraying out a few threads; the weft ones will present somewhat of a waved appearance, while the warp will appear comparatively smooth.

The use of all kinds of patching is so very evident that

it barely needs comment. Whether it be employed for outward appearance, personal comfort, or economical purposes it will need but slight experimental practice to prove its worth.

Inserted patches may be divided into four kinds, *viz.* (1) calico, (2) flannel, (3) damask, (4) dress.

Calico Patches.—These are the various patches

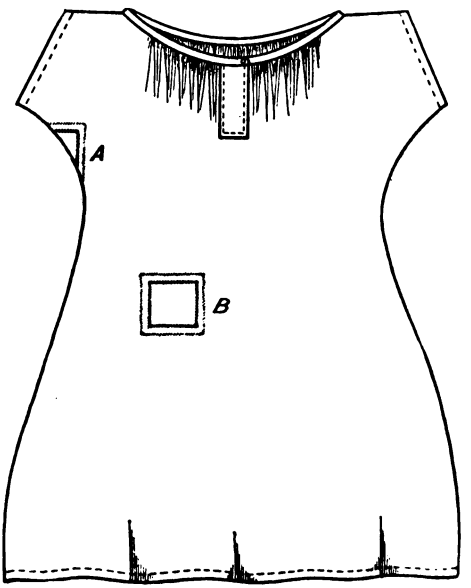


FIG. 48—Patched Garment.
A, Triangular patch ; B, Square patch.

(known also as linen patches) used for the repairing of underlinen, aprons, pillow-cases, etc., and in shape may be either square, oblong, or triangular.

Square patches are those in most general use, but where the worn part is distinctly longer in one direction

an oblong one may be substituted. Examples of this latter shape may be frequently seen at the openings of nightdresses, chemises, etc., where the rent has been simply one straight tear lengthwise. Triangular patches are useful for small corner pieces, and in the case of a garment the third side usually forms part of a seam. They are most generally used for worn places underneath sleeves, the legs of drawers or elbows. In cutting, only one side must be on the cross of the material, the two others being perfectly straight, and the warp and weft threads sewn exactly to meet those of the article patched; in other words, one of the angles of a triangular patch must be a right angle.

The methods of preparing and sewing in calico patches are numerous, but whichever system is adopted, a few general rules must be observed: (1) the patch when complete must be on the wrong side; (2) the corners must be secure and firmly sewn; (3) the widths of hems (varying according to the thickness of the material) must be even at each side. Hemming the patch on the wrong side and felling on the right is the easiest and most general plan adopted, and hemming being the only stitch employed, it is sometimes called the hemmed patch. Some patchers, however, prefer seaming the patch on the right side and felling it back on the wrong; the effect when completed is very similar, and the preparation for both is exactly the same.

Calico patches require there strikings. The first is to mark how much material outside the hole is to be cut away, which should be on the right side, that is, with the line raised on to the outside of the garment. The second striking (*a*, *b*, *c*, *d*), also on the right side, is to mark the amount left for the turnings of the fell, usually about a

quarter of an inch. The third (*e*, *f*, *g*, *h*), marks the actual width of the fell, varying according to the thickness of the material from a quarter to half an inch; and as this is where the patch will be sewn on, it will be found easier if the striking or raised line is on the wrong side. The actual patch must be next prepared, and this also will require three strikings. The first is to mark the size of the second striking on the material (*a*, *b*, *c*, *d*), and as the fell will be hemmed or seamed on to this line it requires to be on the right side. The second striking

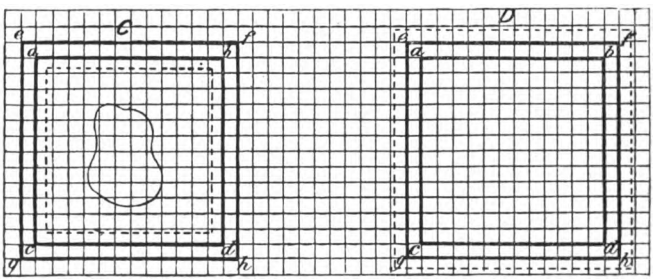


FIG. 49—Calico Patching (chequered lines represent a quarter of an inch). C, Preparation of garment; D, Preparation of patch.

is for the depth of the fell, which naturally must be the same as that allowed on the garment; this will form the outside edge (*e*, *f*, *g*, *h*), so the striking will require to be on the wrong side. The third striking is merely to allow for the turnings of the patch, usually about a sixth of an inch, and may be on either side. Having so far prepared both garment and patch, the next point will be to cut out the patch by the outside striking. If the patch is to be seamed in, the worn part of the garment must be removed so far as the first striking, the corners cut within two threads of the second striking, and the patch

seamed in on the right side, making *a*, *b*, *c*, *d* in both to correspond. This patch is finally felled back on the wrong side, turning the edges in to *e*, *f*, *g*, *h*., which, if correctly marked, should exactly meet the outside striking of the garment. When the simpler plan of hemming the patch on both sides is adopted, it is immaterial whether the worn part is cut away at the beginning or just before felling; the former plan renders the fixing of the patch for the first hemming (wrong side) somewhat more difficult, and inexperienced workers frequently stretch the large hole thus made out of shape; still, on the other hand, there is always the danger of cutting through the patch as well as the worn material if the latter plan is adopted. The old German method of calico patching is gradually losing favour; with the greatest care and neatness it always appears more or less clumsy, besides being very difficult to set in. The method of preparation is exactly the same as for a seamed patch; instead, however, of being sewn in on the right side it is stitched, backstitched or hemmed on the wrong side, and the fell rolled as small and round as possible instead of lying quite flat.

Flannel Patches.—These are by far the easiest of all patches. Their chief feature is, that, owing to the thickness of the material, no turnings are required for the edges of the fell, which, as in the case of most flannel seams, are protected by herringbone stitch: for the same reason, striking for the preparation is out of the question, therefore all points must be marked by small pins or tackings in coloured cotton.

The amount of worn material to be removed must be first decided upon, and then the piece cut for the patch, which must be twelve threads larger (about half an inch) on every side; next, the patch must be tacked

and herringboned on to the wrong side of the article, taking care that they agree with each other respecting the fall of the selvedge and nap, and that the warp and weft threads run parallel. The extra twelve threads on each side of the patch are for the fell; the worn part may be cut away before or after the fixing, but care must be taken to leave twelve threads again on every side for the upper part of the fell. The herringboning should cover

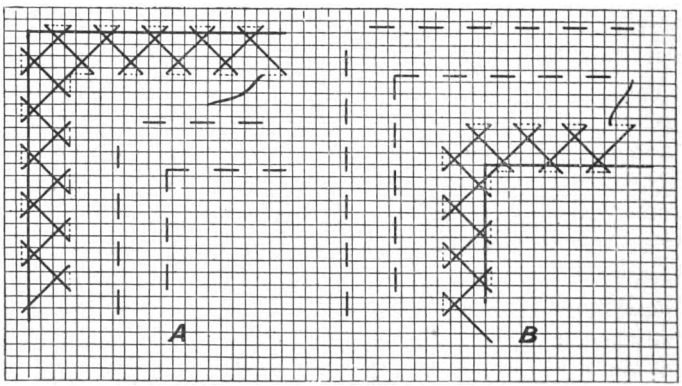


FIG. 50—Corners of Flannel Patch.
A, Wrong side; B, Right side.

four threads, so, when both wrong and right sides of the patch are herringboned, if the counting has been correct, four clear threads in the centre of the fell will be left. The herringboning should be taken through the patch and material together on one side only, as, for the sake of protection, the cotton is brought over the raw edges, and the second side of the stitch taken merely through the single flannel of the garment. The rule for herringboned fells deviates slightly, according to taste and style

of the fabric; but, as a general rule, for patching the space between the two rows of stitching must be the same as the space covered by a single row.

The shapes of flannel patches are: (1) square, (2) oblong, (3) triangular.

Damask Patches.—As they are chiefly employed in repairing table linen the primary consideration must be to make them as flat and invisible as possible; for this reason, damask resembling the original article is very de-

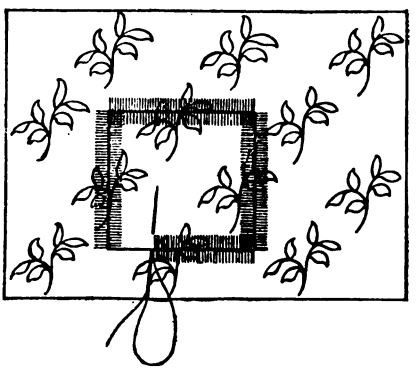


FIG. 51—Damask Patch.

sirable, and the plan of buying serviettes to match the tablecloth has much to recommend it, as the good parts of partially worn ones may be very successfully utilised for this purpose. Damasks are either twilled or plain, and as in other patches, the materials must match in the fall of the selvedge and right and wrong sides; this is most important in twilled damasks, because, if inserted otherwise, the diagonals will run in opposite directions.

These patches may be treated like calico, but owing to the nature of the fabric the "darning in" method will

prove superior. In adopting this latter plan, the finest "flourishing thread" or embroidery cotton will be required.

The hole is cut cleanly into a square or oblong, sufficiently large to remove all thin parts, and the patch cut exactly the size of the hole. It is then darned in with a single stitch, taken from four to six threads deep alternately in patch and article; the stitch must be perfectly upright, the needle being always carried between the two raw edges, underneath the damask and through up on the right side. In turning the corners, the last four or six stitches of the previous row on the patch are re-worked in the opposite direction, thus making the corners firm and secure.

Dress Patches.—Various kinds of dress patches are to be seen, and "fine drawing" is frequently utilised for this purpose.

It is most important to match the patterns of figured and striped materials, so that when finished the continuity of the design will remain unbroken. In shape they do not differ from any of the previous patches, and if sewn with cotton or silk to match in colour, the appearance will be greatly improved.

It is desirable to iron all patches when completed, but in woollen material it requires very special attention; in such cases they are better ironed under a damped cloth, and when possible, on both right and wrong side, taking care, of course, that the iron does not come in contact with the right side of the material. Three distinct methods of dress patching may be noted:—

(1) The ordinary method known generally as print patching; (2) the French or Belgian; (3) the tailor's.

Print patches are seamed in from the right side with

turnings on both patch and article of a quarter to half an inch—these naturally being turned in on the wrong side; woollen material may be also treated in this manner, and the seaming worked with a thread frayed from the same

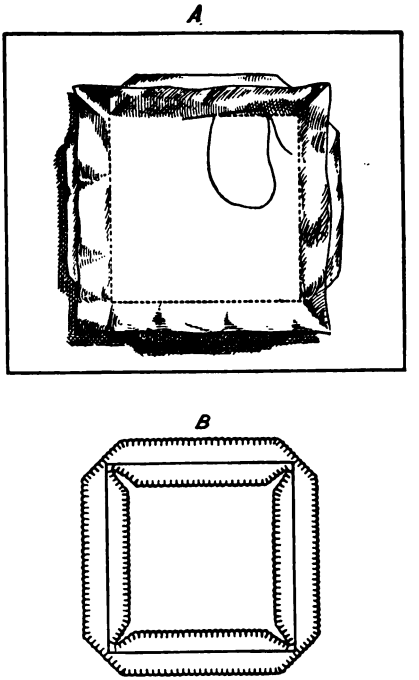


FIG. 52—Tailor's Patch.
A, Putting in piece; B, Edges cut and buttonholed.

substance so as to be less visible than ordinary silk or cotton. The French and Belgians treat this patch very much in the same way, only the seaming is worked on the wrong side instead of on the right. The edges of the wrong side are laid back flat on either side of the seam,

the corners trimmed and cut to within two threads of the sewing, and then when not covered by dress lining, etc., are neatly buttonholed or overcast. Some people, however, prefer turning both edges back on the patch itself, and overcasting or buttonholing them together, but the result of this will not be nearly so flat and smooth when viewed from the right side.

Tailor's patches when successfully inserted call forth universal approbation, chiefly because no stitches are visible on the right side. The wrong side appears similar to the other methods, but on careful examination it will be seen that the seam is worked with stitching instead of seaming. It is put in as follows: Remove all worn parts, cutting the hole into a square, oblong, or triangle, and mark the material with chalk one-quarter of an inch beyond. Next, chalk a piece of material exactly the same size for the patch and cut it out one-quarter of an inch larger. Notch the corners of the hole to within two threads of the chalked line and then stitch the lines of the patch and garment together with the right sides of both facing one another. Finally, wedge a small piece out of the corner of the turnings of the patch to make them lie flat, and then overcast or buttonhole them and press the seam well. Tailor's chalk greatly facilitates dress patching, as points and seams may be marked with it without injury to colours or fabrics.

Tailors frequently employ "fine drawing" for inserting patches, especially in repairing thick cloth garments.

The patch requires to be prepared in the same manner as for damask, but instead of being darned in, the old German seam or "fine drawing" stitch is used. For very thick cloths the needle is taken *through* the thickness of the material and not under and over as in calico, thus making almost invisible stitches (page 13).

Darning.

Darning is the art of restoring the worn parts of any fabric by means of inserting new threads. From its similarity to weaving it is sometimes called hand-weaving. It is most commonly used in thin places, for small rents and tears, and when it is impossible to procure material resembling the worn article. Care must be taken that the new threads inserted agree with the original in quality, texture and size. With the exception of Swiss and stocking-web darning, all darns should be worked on the wrong side, beginning at the top left-hand corner; linen darns may be stretched on cardboard to assist the worker, and for rounded surfaces, such as the heels and toes of stockings, wooden balls and eggs can be used. Splitting the warp threads while darning in the weft is a very common fault, and one to be specially guarded against, as it weakens the darn and spoils the appearance.

The simplest method of teaching darning is on single thread canvas; the threads can be easily seen and counted and the method clearly explained, so that when afterwards worked on ordinary fabric the difficulties will be considerably lessened. Stocking-web, *i.e.*, a material representing coarse knitting, is much used for this purpose in elementary schools with very good results; owing to its elasticity it has an advantage over canvas, as the evils of puckering can be encountered, but except for twill, Swiss, and stocking-web darns, it is much more difficult to manipulate, especially for beginners. All lessons on darning should be illustrated by diagrams, and the stitches carefully explained on chequered blackboards, or demonstrating frames. Coloured cottons and

wools will facilitate the lesson, making the stitches more visible and the errors more quickly detected.

Darns may be roughly classified as follows :—

1. Running.
2. Plain.
3. Damask. (*a*) Plain or diapered, (*b*) Twill.
4. Swiss and Stocking-web.
5. Hedge-tear, Catch or Triangular.
6. Crosscut, Breakfast or Diagonal.

Running Darns.—These consist merely of a certain number of rows of running laid side by side, and worked on the wrong side, the same threads being taken up on the needle every alternate row. They may be almost any geometrical shape, square, diamond and waved being the most common, and the threads are put in the warp way if possible as these are the stronger. Small loops require to be left at the end of each row to allow for shrinkage in washing; in calico and linen many people prefer these loops to be cut, so as to allow them to work in and become a part of the fabric. The use of these darns is to strengthen weak places where an actual hole has not been worn; generally the stitch is exactly the same as in running, but occasionally in thick articles, especially coarsely knitted ones, it proceeds by one thread instead of two. The number of threads left between each row should correspond with the number taken up for each stitch. Square-shaped darns are mostly used for strong fabrics, but for thin and flexible materials diamond or waved are more suitable; in the former the ends, *i.e.*, the top and bottom of the square, are worked in a straight line, and unless the material is very strong, the darn is apt to pull away from

the surrounding material. When worked with the ends pointed or a series of points (waved) the strain does not

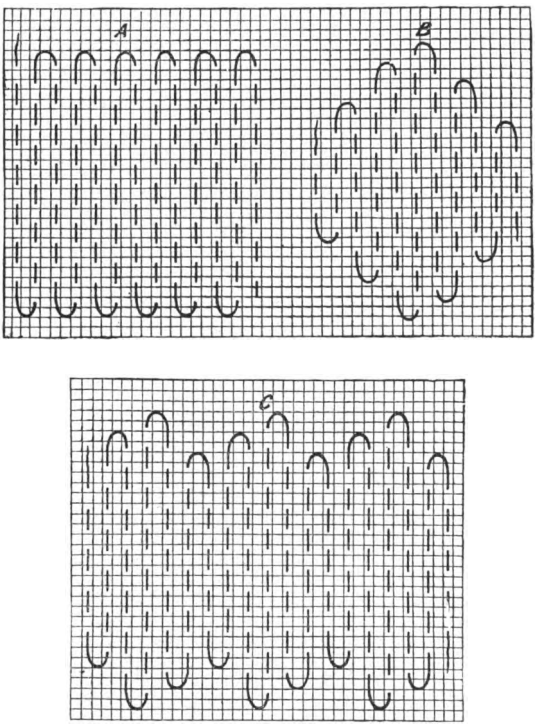


FIG. 53—Running Darns.
A, Square; B, Diamond; C, Waved.

fall successively upon one or two threads, but is more evenly distributed.

Plain Darns.—Where articles are actually worn into holes some method of darning must be adopted to fill such spaces so as to resemble the original weaving as

nearly as possible; plain, damask and stocking-web darns are usually adopted for this purpose. Plain darns are an imitation of ordinary weaving where no patterns are interwoven or printed; the warp threads are inserted first, a small margin of running darn being used round the edge of the hole to strengthen the surrounding fabric and also to hold the darn in its right position. The hole may either be left its natural shape or cut evenly into squares or oblongs; at any rate, all loose and frayed edges must be trimmed. The amount of running darn em-

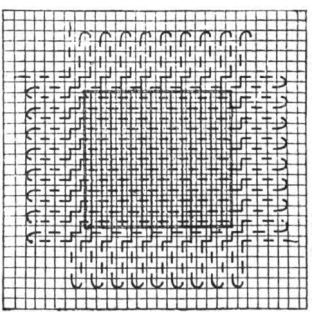


FIG. 54—Plain Darn.

ployed depends entirely upon the thinness of the fabric surrounding the hole, and so must be left to the discretion of the worker. The weft threads are next inserted, each being carried alternately over and under the warp threads, thus forming a kind of close lattice work. Every one of these threads is also preceded and finished by a few running stitches, generally equal in number to those employed for the warp side. Loops of thread at the end of each row must not be omitted, and the shapes of the edges are treated as in running darns.

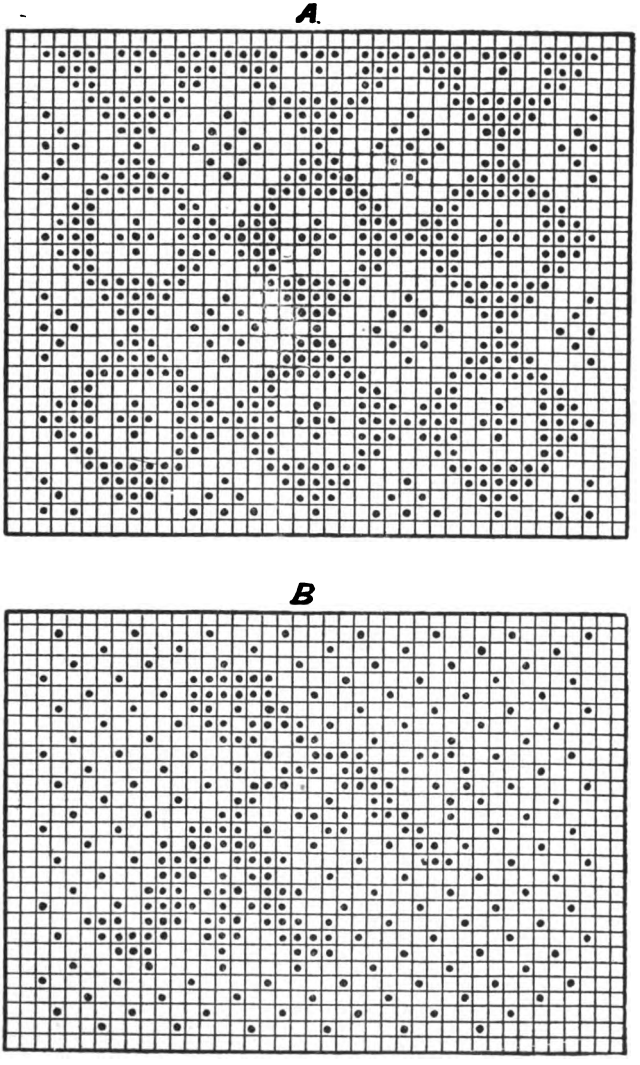


FIG. 55—Damask Darns.
A, Plain or Diapered ; B, Twill.

Damask Darns.—These are simply variations of plain darns, and, as the name implies, are used for mending damask articles. Two kinds may be noted: (1) diaper or plain, (2) twill. Both kinds are worked like ordinary darns as far as the warp threads are concerned; the pattern is formed by taking up and passing over a different number of the strands when inserting the weft threads. A small drawing of the design on chequered paper is almost essential; the threads to be taken up can be indicated by dots, and the intervening spaces will show the strands over which the needle is to pass, but it must not be forgotten that the darn is worked on the wrong side, so the drawing must be designed from the same aspect. Twill damasks are woven diagonally; in darning them one thread must be taken and three or four passed over, and in each row this thread must be worked one or two threads to the right or left of the preceding one, according to the nature of the weave. Tablecloths and similar articles do not generally consist of a plain twill damask, but have floral or geometrical designs interwoven, in which case the pattern must be drawn and worked into its place as in a diapered pattern. Damask darns should be worked with very fine flourishing thread, but as it is sometimes very difficult to procure, and also unpleasant to use owing to its uneven nature, embroidery cotton may be very successfully utilised in its stead (page 87).

Stocking-web and Swiss Darns.—The one name might certainly include both of these darns, as they are practically the same thing; custom has, however, designated as Swiss darning only the strengthening of a weak place in a knitted article, while stocking-web refers to the mending of an actual hole in the same kind of

fabric. It is a method much more commonly adopted on the Continent than in England, perhaps because knitted garments and stockings are so much more popular amongst the foreign peasantry, and as it is thoroughly taught in every school the natural result is that its manipulation seems to be as easy to the housekeeper as any other kind of darning. The stitch can represent

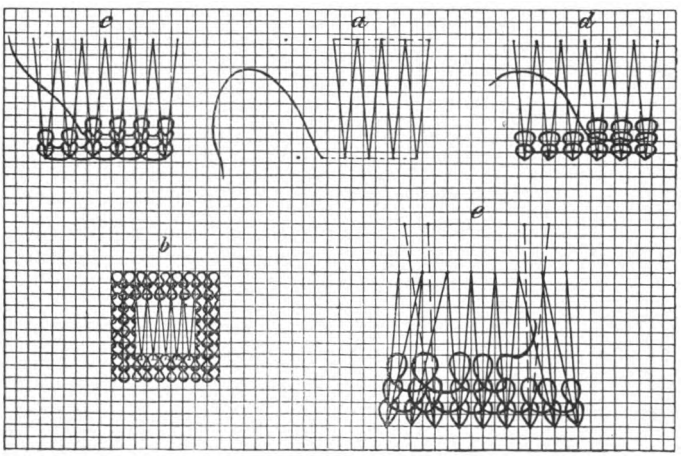


FIG. 56—Stocking-web Darn.
a, Stranding for cardboard ; *b*, Stranding on stocking-web ; *c*, Plain knitting stitch ; *d*, Purl knitting stitch ; *e*, Narrowings or takings-in.

accurately plain or purl knitting, and is very firm and elastic when completed, being also practically invisible. Unlike all other darns, this is commenced at the bottom right-hand corner and worked on the right side. For teaching purposes it will be found wiser to begin on cardboard, with threads stranded ; the accompanying diagram illustrates the various methods of procedure, the first representing the stranding of the cardboard. As far as

possible, when working an actual hole the stitches should be unpicked across the top and bottom so as to make it square or oblong. The loose pieces at the sides of the hole must be turned underneath until the darn is completed. The stranding requires one more point at the top than the bottom; for example, if the bottom consist of six clear stitches the top must have seven points for stranding, and yet only have the same number of stitches when complete. The difficulty is surmounted by having five whole stitches, with half a one on either side, the reason of this being the actual nature of the knitting. The stranding begins at the bottom right-hand corner and proceeds through the half stitch on the top right hand, up through the whole stitch to the left of this, back through the first bottom stitch, up through the next, and so on till the whole is completed, always taking care to begin and end at the bottom right- and left-hand corners respectively. When working on cardboard it is necessary to take the first row of stitches right through as well as the ones at the end of each row for the sake of firmness; the second row is worked with the board turned upside down, and continued as before from right to left. Figures *c* and *d* illustrate plain and purl stitches; where narrowings or takings-in occur in a garment the stranding must be done according to Figure *e*, so as to enable two stitches to be taken together when required; each narrowing will require an extra dot. In Swiss darns we have exactly the some stitch, only, of course, as there is no hole the stranding is not necessary, and the threads are simply worked over each stitch of the worn part. Holes of all sorts should be stretched on cardboard before being stranded; each row of stitches must be strengthened at the sides with Swiss darning, and each stranding cotton

cut and drawn out separately while working the last row. Finally, the wrong side is made neat, the worn, loose material frayed away, and all ends made secure.

Hedge-tear, Catch or Triangular Darn.—These most commonly occur in outside garments, such as dresses and aprons, which have been caught suddenly on sharp objects like nails, brier bushes, etc., the result being a tear

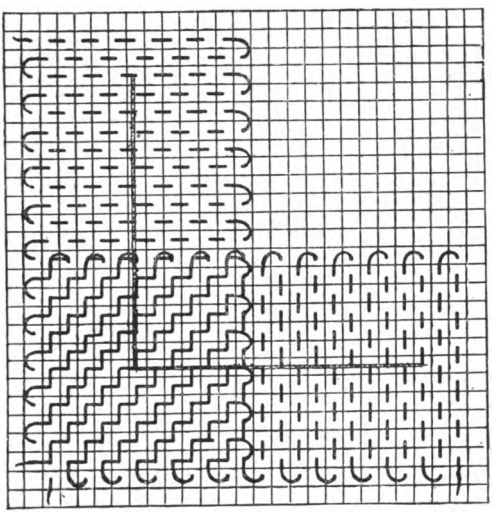


FIG. 57—Hedge-tear Darn.

resembling somewhat two sides of a square. The stitch employed for mending these tears is the running darn, by which the tear is gently drawn together. Four to eight stitches are taken on either side of the tear, which may be continued to the corner, and the adjoining side worked in the same manner to meet it; or each side may be continued down to the outside level of stitches so as to make

a complete square corner. The former is the German method, but the latter is undeniably stronger. While drawing the needle and thread through the material it is wise to hold the edges of the tear firmly with the left hand so as to prevent them fraying, and also to continue the darning two or three rows beyond the ends of the tear for the sake of strength. The darn must be begun at the top left-hand corner of the selvedge way of the material, with the warp threads lying along the finger and the weft threads across it. Both the warp and weft threads are worked in the corner, the stitches here being made to represent a series of steps, crosses, right angles, etc.

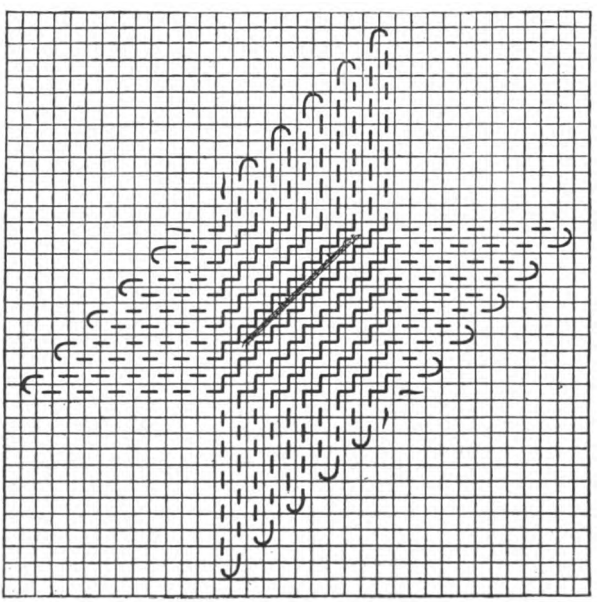


FIG. 58—Diagonal Darn.

Crosscut, Breakfast, or Diagonal Darns.—With the exception of shape, these darns are the same as the hedge-tear darns. The tear usually occurs in damask through careless handling of a knife, causing both the warp and weft threads to be cut diagonally; they will be found at all angles, and require very careful manipulation in mending. Various shapes for this darn are seen; the easiest method undoubtedly is to draw the cut together with running darn, making the edges (where the loops at the end of each row occur) parallel to the tear. Unlike the usual running darn it is crossed; this prevents the tear being drawn open when it is used, and the shape and method of the weft darning must exactly match that employed for the warp; in other words, the darn when complete must represent two exact rhomboids which cross each other in the centre where the tear originally occurred.

CHAPTER VI.

CLOTHING—CLOTHING MATERIALS.

THE primary object of clothing is to retain the natural temperature (98·4° Fahr.) of the body. The temperature of the body is regulated by the amount of heat *gained* or *lost*. Heat is produced chiefly by food, which in its turn is regulated by (1) exercise, (2) atmosphere, (3) clothing. Clothing is in itself only warm when it does not lessen or conduct away personal heat, and when the body is warmly clad the quantity of food required is not so great, as less heat is lost. Heat is lost from the body chiefly through respiration, conduction, evaporation, and radiation; clothing cannot, of course, check the loss of heat through respiration, that is, breathing, but it can considerably control it as regards the three latter. Perhaps conduction, or the coming in contact with cold or warm objects, chiefly affects clothing, and the amount of heat lost through this channel varies considerably, according to the nature of the objects in question. Certain woods, for example, do not readily become heated when brought into contact with boiling liquids, hence wooden spoons are used in cooking instead of metal ones, which quickly become unbearably hot. If the natural temperature of the body is not maintained sickness ensues, and if raised or lowered only a few degrees death follows. It is, therefore, of the utmost importance that such clothing

should be provided as will promote this equality of heat, and at the same time permit the evaporation of the natural perspiration of the body as well as the radiation of heat into space. Through the process of radiating or giving off heat into surrounding air, much heat may be gained or lost, and radiation of heat in clothing may be influenced considerably through the power of colour attractions. Black, for example, will absorb far more heat from the sun than white, a testimony very practically borne out by the natives of India and other hot climates.

A certain amount of porosity is required in clothing materials to allow the natural moisture from the skin to be gradually given off into the air through evaporation, as well as to allow air to gain access to the body. Air is one of the best non-conductors of heat, so loosely made garments admitting a certain amount of air to the body will be much warmer than tight ones which exclude the air. At the same time, clothing must not be so loose or so thin as to admit the cold, outside air of winter, but only so much as will be warmed by the natural heat of the body and will allow free ventilation. Weighty clothing will not necessarily increase the warmth, and for the comfort and ease of the wearer it should be as light as possible; a certain amount of weight is unavoidable, and this should be so evenly distributed as to dispense with undue strain on any one organ of the body. Heaviness may be sometimes rectified by making the garments of the right material to exactly fit the figure, thus avoiding superfluous fulness in one part. Summer is the time when the body very freely perspires, so it is important that the garments next to the skin should be good absorbents of moisture, not, as in the case of linen, retaining it to such an extent as to become thoroughly

wet. Good absorbents will allow the moisture to pass gradually off into the air and prevent the surface becoming wet, whereas bad ones will act as a sort of glass case and retain the moisture next to the skin. Moisture and water are very good conductors of heat; this fact can be practically tested by passing from a room to a bath of exactly the same temperature, the latter would feel considerably the colder of the two. Moisture, therefore, retained next to the skin feels cold and produces chills. More loss of heat is occasioned in winter through radiation because the difference between the temperature of the atmosphere and body is greater, and so causes more radiation of bodily warmth. Sleeping clothes must be of such a nature as to keep an equable temperature, and not so light as to produce chilliness, or so warm as to cause the skin to perspire. All parts of the human body require to be at rest during sleep, and harsh and coarse sleeping garments are not advisable, as they are apt to irritate and excite the skin. Some notion of ideal clothing may be gathered from comprehending Nature's provision for birds, four-footed animals, etc., which are warm through their non-conducting properties, as well as light and admitting free ventilation.

Clothing materials are chiefly products of the animal and vegetable kingdoms, and may be classified as follows :—

1. **Animal.**—(*a*) Wool, (*b*) Hair, (*c*) Skins, (*d*) Silk, (*e*) Feathers.

2. **Vegetable.**—(*a*) Cotton, (*b*) Flax, (*c*) Jute and Hemp, (*d*) India-rubber.

Wool, silk, linen and cotton form the foundation of all textiles, and are the principal fibres used for clothing materials.

Wool.—Wool is the skin appendage of the sheep, and has been used for clothing purposes from the earliest times. Its chief features are :—

1. Non-conduction of heat.
2. Strength, combined with softness, fineness and elasticity.
3. Disposition to felt.
4. Readiness to absorb dyes.

Wool differs from ordinary hair in its structure, although strictly speaking it is a hair fibre. Custom has, however, designated hair to mean stiff and straight animal fibres, while the flexible, wavy and curly ones are known as wool. When microscopically examined the reason of this distinction is quite evident, the formation of the two fibres being quite different. The appearance of hair is smooth and even ; wool, on the contrary, is very irregular, having numbers of infinitesimal scales overlapping each other, known as serrations or notches. It is these serrations, numbering from 1800 to 2800 per inch, which give wool its peculiar felting quality, a property belonging to no other textile fabric. The serrations taper from the root outwards, and when loosened by potash will cling closely to more fibres. The felting, known also as fulling and milling, is brought about by heat, moisture and pressure, during which processes the bulk is reduced in length and width but increased in thickness. The readiness with which it absorbs dye is due partly to the minute undulations caused by the knitting together of the serrations. The effect of different dyes on wool varies somewhat, some scarlets and browns making the wool harsh, while other agents, especially indigoes, increase its weight and consequently its value. As a non-

conductor of heat, wool takes the foremost place in clothing fabrics. It also quickly absorbs moisture, and does not readily become damp with perspiration. Its open, rough structure makes it further capable of holding a certain amount of air as well as of allowing free ventilation. Being strong and durable, it possesses the best characteristics of good dress materials. Owing to its elasticity it greatly resists outside forces, besides retaining its original softness during wear. The principal wool-producing countries are :—

1. Germany. Chiefly Silesia and Saxony.
2. Australia and New Zealand. Known in trade as Colonial wools.
3. Great Britain. Supplying South Down, Lincoln, Leicester, Cheviot, Shetland and Welsh wools.
4. South Africa. Generally called Cape wools.
5. Russia. From the neighbourhood of Odessa.
6. South America. Chiefly from Buenos Ayres district.

The finest wool is generally known as lamb's wool, as it is clipped from the animal when only about six months old. The second shearing is somewhat thicker, and receives the name of yearlings; all subsequent growths come under the head of fleece. Short staple wool, that is, wool in which the groups or locks of fibres are short, is converted into woollen yarn, while the longer ones prove more economical for worsted yarns. These two yarns are both used for spinning. Their appearances are decidedly dissimilar, woollen yarn being merely tangled meshes with an uneven surface, while in worsted he fibres are symmetrical and the serrations all run in the same direction. The Llama, Alpaca, Thibet and

Angora goats all supply hair closely allied to wool, and on account of their beautiful lustre are greatly used in the manufacture of fine fabrics.

Silk.—Silk is the natural production of the silkworm, a wormlike creature belonging to the Bombyx Moth tribe. The eggs are hatched in spring, and the worm or caterpillar grows rapidly, feeding principally on mulberry leaves. Next it produces its small oval cocoon, round which the silk is spun. The mouth of a silkworm is fitted with a spinnerette, through which the silk is emitted, having been previously secreted by a pair of glands placed at either side of the body. The silk thread consists of two fibres of purely animal matter, bound together by a gummy substance chemically called sericin. During this process the silkworm gradually decreases in size, then sheds its skin, and finally, after a chrysalis stage, develops into a butterfly moth. In order to remove the silk from the cocoons, they are plunged into boiling water and soap, which loosens the gum; then the winder catches several of the loosened ends with a soft brush and winds them together as one thread on reels, when they are ready for re-winding by machinery in hanks or skeins. The silkworm is hardly cultivated in England, but large quantities of raw silk are imported, chiefly from France. The raw silk is of two kinds, *neat* and *spun*. The former is in the hank form, being wound direct from the cocoon, and the latter is the thread spun from the waste made in winding, and from any cocoons which may have become tangled and broken. Before silk is fit for weaving it must be converted into one of three forms, known respectively as Singles, Tram and Organzine. Singles is the single reeled thread twisted to give strength and firmness. Tram consists of two or more

threads twisted together, and this is the kind usually employed for the weft threads in weaving. Organzine or thrown silk is made of several singles twisted together in the opposite direction to that of the twist in the singles themselves; being consequently much stronger, it is used for the warp threads. The chief characteristics of silk are: (1) lustre, (2) strength, (3) fineness. Its appearance under a microscope is an even, round, glass-like fibre; its strength is three times as great as linen. No other textile fibre can be spun to such a degree of fineness combined with elasticity; mohair and China grass are the only threads which can in any way approach it in lustre, and these fall far below it in this respect. It is frequently introduced into woollen goods to impart lustre, and it ranks next to wool as a non-conductor of heat.

Cotton.—Cotton is a vegetable fibre obtained from the downy lining of the seed pod of the cotton plant. The plant belongs to the mallow order, but this particular species only flourishes in warm climates; from the earliest times India has been the principal cotton-producing country. Until the beginning of the present century European cotton-spinners were mostly dependent upon Asia and the West Indies for the raw material, but since then it has been grown in other countries, notably in the Southern United States, Brazil and Egypt. India not only was the first country to grow cotton, but also was the originator of its manufacture into a textile fabric. Although the Indians excelled in weaving with the crudest of spindles, and have produced the finest of muslins, they do not seem to have had that inventive genius necessary to improve or develop their appliances into any kind of mechanical perfection. The spinning-jenny, a complicated weaving machine, was invented by James

Hargreaves of Blackburn in 1767, and shortly afterwards Arkwright, also a Lancashire weaver, produced his water frame. These two inventions form the foundation of all subsequent weaving machinery, and Lancashire still remains the leading centre of the cotton manufacture. A cotton fibre is flat and twisted, with clear edges, somewhat resembling a wrinkled ribbon, and varying in width from $\frac{1}{800}$ to $\frac{1}{2000}$ of an inch. It is capable of being spun to a very great length, and this, combined with its fineness, strength and cheapness, causes it very largely to be used in manufacture conjointly with wool and silk. Purely cotton textiles are numerous—calico, print, jean, muslin, lace, sheetings and velveteens being some of its products. When blended with wool it is extensively used in the making of cheap cloths, and it also forms the warp threads in what are known as Union Textiles. It is further frequently mixed with inferior silks, and is used for the backs of cheap velvets. Its power of conducting heat is greater than either wool or silk, but considerably less than linen.

Linen.—Linen is obtained from the flax plant, a small delicate annual with a tiny blue flower. The plant is pulled by hand in summer, the seeds, known in commerce as linseed, being removed and the straw subjected to various processes to separate the fibrous part which constitutes the linen. First, it is steeped in water until it is quite rotten, and then passed through a drying and beating process on revolving wheels until everything foreign is removed, when it is ready for manufacture. Flax has also been used from very reinote ages as a textile fabric, Egypt being the chief centre of its activity, and many linen mummy cloths have been discovered, some indeed of exceedingly fine texture. The

principal linen-producing countries of the present day are Ireland, France, Belgium and Germany. Belfast is the chief centre of the Irish trade, and plain linen goods are also manufactured in Great Britain, notably in Fifeshire and Yorkshire. The flax fibre is round and irregular, very durable, and capable of very extensive bleaching. Plain linen has a simple weave with the weft threads alternately interspersing the warp ones, and when woven with a pattern, it is usually called damask. As a clothing material it should not be placed in close proximity to the skin, as it is a very good conductor of heat.

Jute and Hemp.—These plants are only used in manufacturing very rough textiles: in form they resemble coarse and inferior flax.

India-rubber.—India-rubber is derived from the juice of various trees, and is extensively employed for waterproof goods; owing to its impermeable nature it will not allow free evaporation of perspiration, so it should only be worn for a short time.

Skins.—Skins supply two clothing materials, furs and leather. Furs are the dried skins of various animals, such as the bear, beaver, sable, etc., with the hair left, and on account of their capacity of retaining heat are an ideal clothing. Leather is the tanned skins of various animals, notably oxen and calves, with the hair removed. It is chiefly used in the manufacture of boots and shoes.

CHAPTER VII.

DYEING, WIDTHS AND IDENTIFICATION OF MATERIALS.

Dyeing is the art of imparting colour to textile and other materials, and has been practised amongst Eastern nations from the earliest ages. The ancient Hebrews seem to have been acquainted with a few colours, and probably they acquired a certain knowledge of dyeing from the Egyptians and Phœnicians. The famous Tyrian purple obtained from a species of shell fish is said to have been discovered in the year B.C. 1500, and amongst the ruins of Pompeii is to be found a Roman dyer's shop with all its apparatus.

Dye stuffs of the present day may be divided into two classes—*viz.*, natural and artificial. Natural dyes belong chiefly to the vegetable kingdom, and are obtained from the roots, wood, bark, leaves, flowers, and seeds of various plants. Sometimes the whole plant yields the dye, more frequently it is extracted from one or other of its parts. The principal plants supplying dyes are:—

(1) Indigo, (2) Madder, (3) Lichens, (4) Safflower, (5) Aloe, (6) Peach and Lima woods, (7) Brazilian red woods, (8) Panama vine, (9) Persian berries, (10) Quercitron bark.

Logwood is procured from a tree indigenous to South Africa, and is extensively used in dyeing blacks.

Animal dyes may also be classed as natural ones, but they are very few in number. Cochineal, obtained from a small insect found in Turkey, Morocco, Spain and S. France, is the most important red colouring matter for animal fibres, and Lac, an insect of India, China and the Eastern Archipelago, produces dull reds.

Since the discovery of coal-tar colours, the industry of artificial dyeing has rapidly increased, due no doubt to the progress of inorganic chemistry, and these dyes can only be understood and classified from a chemical point of view. The first of these dyes was introduced in 1856; the number now in use is considerable, and increasing daily. Aniline dyes are conspicuous for their intensity of colour; for example, 1 grain dissolved in 1500 gallons of water is capable in twenty-four hours of dyeing silk thread thoroughly immersed in it. But the great drawback to them is their fugitive nature, the colour very rapidly disappearing in a strong light. Alizarine, the dye used for Turkey red, was formerly obtained from the root of the madder plant, but now it is almost exclusively derived from coal tar.

Germany is the headquarters of the coal-tar industry, France follows next, and the produce in Great Britain is calculated as one-third less.

Widths of Textile Fabrics.—Knowledge of the various widths of different materials is important, in order to estimate correctly the amount required for different garments. There are three distinct normal widths, known as single (thirty inches), double (forty-five inches), and mantle (fifty-four inches). Silks and velvets are very narrow, and fall considerably below the average single width. Many kinds of woollen goods are manufactured in both single and double widths, and

some materials, such as tweeds and serges, may almost be procured at any width desired. The accompanying table gives the inches of the average widths of the principal classes of dress goods:—

	Single.	Double.	Mantle.
Silks, velvets, poplins, etc.	18-24	—	—
Velveteens	27	—	—
Serge	27-36	42-48	50-54
Cashmere and French merino	—	45	—
Cloths	—	—	52-56
Tweeds, homespuns	30-36	—	52-56
Beige	24-30	40-44	—
Flannel	—	—	—
Grenadines, gauzes, canvas, etc.	24-30	40-45	—
Calico	28-36	—	—
Prints, ginghams, sateens	30-32	—	—
Muslins	30-36	—	—
Linen	—	36-42	—
Bodice lining	—	34-38	—
Skirt linings	27-30	36-45	—
Waterproofing for tourists' skirts	—	—	60-62

Silk.—Silk may be had in endless varieties, and may be twilled, plain, corded, soft, thick, watered, etc. The ordinary plain dress silks are reversible, lustrous and firm. The common method of testing the quality of silks by weight cannot be relied upon, as unfortunately many chemicals are often employed in dyeing to make it heavier. One cwt. of raw silk has been known to increase to four during dyeing, tannin, sugar and perchloride of tin being much used for this purpose. In choosing silk, the quality of fibre and not weight is the test; inferior silks are also mixed freely with cotton, and this may be easily detected by slightly fraying out the edges. Besides the ordinary plain silks of commerce, the following special makes are in much demand:—

1. Surah.—A thin twilled silk, soft, and with a glossy surface, much used for sashes, draperies and facings.

2. Corded Silks.—These are manufactured with a rounded cord running straight across from selvedge to selvedge. A strong but dull make is known as gros grain, and a similar but somewhat softer kind as faille française. Irish poplins and bengalines belong to this class of goods, the latter having a little finer cord than the former, but they are not pure silk fabrics, the weft threads being made of fine worsted yarn. Ottoman silk is a very thick silk used chiefly for mantles; it has one very thick cord alternately with one or two thin ones.

3. Satins.—Satins are silks with a highly glossed surface on one side, caused by a distinct process in weaving, based on the ancient satin stitch of antique embroidery. A large proportion of the weft threads are brought to the surface after the principle of a twilled darn, one thread being taken up and four, six or even eight passed over. The wrong side is like plain weaving, and is smooth and dull; in inferior makes cotton is substituted for this part. Peau de soie is a plain silk with a dull satin finish. Satin merveilleux is a twilled satin-finished silk, somewhat resembling surah, but more expensive, thicker and more durable; it is used for complete dresses as well as for trimmings.

4. Watered and Moiré Silks.—These silks are subjected to processes of moisture, heat and pressure for the purpose of effecting a patterned fabric suggestive in design of marble or running water and, at the same time, enhancing the brilliancy of the silk. Gros grain is the principal kind of silk used for this purpose, but satin and faille française are also utilised. Watered silk has a bold and large pattern suggestive of smeared water, while

moiré is much finer, as though to represent a trickle or drip of running water.

5. Washing and Soft Silks.—The enormous development of late years in these silks almost marks a new era in the silk manufacture. They are most extensively used for blouses, children's frocks, draperies, etc., and since the recent discoveries in the art of dyeing they are to be procured in beautiful artistic colours. Pongée or Asiatic silk, so named from its original source, is a very thin, plain silk with a glossy finish, alike on both sides, and with a somewhat streaked, irregular surface. China silks, although very like Pongées, are much closer, firmer, softer and smoother. Tussore silk is a species of Indian raw silk of a whitish-brown colour, which, in spite of being finely and closely woven (thus very difficult to sew), feels harsh and coarse to the touch. It is extensively embroidered in elaborate designs and colours by the natives, and is much prized by Europeans. Foulard is a soft, twilled, washing silk, generally with a printed design in self or contrasting colours.

6. Brocades.—Brocades are silks with floral or geometrical designs usually raised on a groundwork of satin, representing a sort of damask satin. Broché is the name given to the inferior brocades with the embossed pattern on the right side only, and not woven in the material as is the case in the former. Both kinds are extensively used for trimmings and mantles, as well as for complete dresses.

7. Crape.—Crape is a very thin silk fabric made of spun fibres tightly twisted and retaining the natural gum of the silkworm; it is woven like a thin muslin, and then boiled to extract the gum. The heat and moisture cause the fibres partially to untwist, and this gives a

waved and rough appearance to the fabric. Europeans will not divulge the secret of crape finishing by which the crisp, uneven surface is brought to such perfection; but in Japan the material after weaving is dipped in cold water, then alternately in hot and cold water in rapid succession, and finally rolled and dried. Crape which has lost its crispness may be renovated by simply rolling it round a stick, bottle, or roller of some sort, and holding it over a kettle or saucepan of boiling water until it is saturated with steam, then, after leaving it to dry, removing it from the roller. Crape when dyed black is used for mourning apparel; coloured crapes are employed chiefly for trimmings.

Pile Fabrics.—These comprise velvets and plushes in silk, and velveteen, plushes, fustians and corduroys in cotton. They are rich, thick fabrics with a soft raised pile caused by additional threads being drawn over a needle, and the loops afterwards cut, teazled and singed on hot iron cylinders. According to the variety of the fabric the face is cropped before or after dyeing. Plushes have a very much longer pile than velvets; both when made entirely of silk have a stiff and crisp back. Cotton-backed velvets, known as patent velvets, have a silk pile raised on a cotton foundation; shot velvets have a foundation of one colour and a pile of a contrasting one. Velveteens are an imitation of velvet made entirely of cotton; they are much softer and heavier, and lack the crispness of silk, but they do not spoil or mark so quickly with rain. They are made a few inches wider than velvet, and are much cheaper. Fustians and corduroys are names given to heavy cotton pile fabrics used chiefly for men's clothing, and made almost exactly like velvet, but the loops in corduroys are left uncut. All pile

fabrics require great care in making, as they shade differently according to the direction of the warp threads, and if they are placed upside down the result will be a rubbed, light, whitish appearance. The pile should stroke up smoothly under the hand; in closely-cut piles this way is sometimes difficult to discover, but if the fabric is held up to the light it will shade darkly or lightly, according as it is turned up or down. The garment must be made so that the pile shades darkly to the observer, and to the wearer looking down it will appear light; also when brushed, it must be done upwards, along with and not against the pile. Velvets and velveteens very quickly mark and rub under the hand, consequently they require special care in holding: thus it is wiser to hold such fabrics with another piece of itself, so that the two piles coming in contact will interlock and support one another, and prevent them being flattened or rubbed in the wrong direction. In ironing, the back only can be brought in contact with the iron, and this should be held in mid-air and not placed on an ironing table, or the pile will be spoiled. Bodice seams require firm and flat pressing, so they must be excepted from this general rule, and ironed over a roller covered with a piece of similar material. Surface dust may be removed with a small bundle of old crape, or with soft hat brushes.

Woollens.—Woollen materials are the most popular of all dress fabrics on account of their healthiness, durability and price, combined with a good appearance. Endless varieties of designs and weaving are manufactured, every season bringing out some new development. Much of their durability depends upon the original quality of the wool and the nature of the dye,

but as a general rule it will be found that twilled materials are the best for wear, with the exception perhaps of homespun cloths made of stout, undyed, worsted yarn. Many woollen fabrics are reversible, and many others are so nearly alike on both sides that it is difficult to determine a difference; the surface with the most wool or nap may generally be distinguished by allowing a strong light to fall upon it, and this is the right side; twilled fabrics are most usually manufactured with the twill on the right side running up to the left shoulder when placed against the figure. Foulé is a term applied to woollen goods after they have been subjected to certain finishing processes. Woollen yarns are more capable of undergoing these processes because the felting nature of wool, caused by its numerous serrations, has been allowed to take its natural bent, and not drawn and flattened as in the case of worsted yarns. This foulé process, technically known as milling or fulling, increases the textile in thickness, but considerably decreases it in width and length. In order to produce this change the fabric is thoroughly saturated with soapy water, then twisted and wrung between two upright rollers, thereby causing the weft threads to shrink; and in order to shrink the warp threads it is further compressed for a certain length of time in a kind of box machine. Milling, in short, is merely a method of shrinking in order to blend, and so render practically invisible, the warp and weft threads; it also softens the fabrics, but the colour and brightness is apt to suffer during the process. After fulling, further finishing processes have to be gone through: first, raising, by which the nap or surface is raised by machinery somewhat like cylindrical combs; next they pass through the boiling

or crabbing stage for the purpose of imparting permanent lustre, which is done by winding the fabric on large rollers, and boiling it for several hours. Finally, its solidity, softness and lustre are improved by good pressing, and then it is ready for use.

The principal kinds of woollen goods are :—

1. **Serge.**—Serges are the most popular of all woollen goods, and they are capable of resisting very hard wear. The fabric is a twilled worsted one, very springy and harsh to the touch, and manufactured in almost every width, quality and thickness. The twills also vary very much in size; for instance, Indian serge has a very fine twill and is a soft make; estamené is coarser, as well as harsh and springy; foulé serges, again, are fine and soft, and have been subjected to partial milling, while Cheviot or diagonal serges have a very coarse twill and are loosely woven. Sea water is introduced in dyeing some navy serges, so as to render them capable of resisting the action of salt water. Those dyed with indigo dye will be found the most serviceable both in wear and in steadfastness of colour.

2. **Cashmere and French Merino.**—These are soft, twilled worsted fabrics made from the wool of the merino sheep and Thibet goat. In cashmere the twill is very fine, irregular, broken, and only on the right side, the back or wrong side being plain and smooth, with a slight cord running across it. French merino is a very similar material, but slightly heavier and twilled on both sides. They are both capable of dyeing any colour or shade, and their width is almost invariably forty-five inches. Indian cashmere is a slightly thicker make, twilled on both sides, and with a woolly surface.

3. **Mohair.**—Under this name may be classed all the

various lustrous goods made primarily of the hair of various sheep and goats, such as the Peruvian, Angora, Alpaca and Llama. These hairs are freely mixed with silk, wool and cotton in manufacturing various kinds of dress fabrics, the general names for them being alpaca and lustre.

4. **Cloths.**—Heavily milled woollen fabrics with soft glazed surface are known by the name of cloth; they are very close fabrics owing to additional heavy pressure after milling, and very durable, but unfortunately they lend themselves very easily to cheap imitations. The principal kinds of cloths are: (1) Melton, (2) Habit, (3) Covert, (4) Amazon and Vicuña. Melton is a firm, closely-woven cloth, used chiefly for tailor-made dresses. Habit cloth is much softer, and finished with a bright glossy nap. Covert coatings are thin summer cloths made of natural undyed wool, resulting in fabrics of grey, drab and fawn colours. Amazon is a very favourite dress cloth, somewhat harder and duller than habit, and vicuña closely resembles it, but is more elastic; this latter was originally made of the fine, soft, vicuña hair.

Mungo and shoddy are cloths remanufactured from cuttings and rags, the former being made from the hard, well-milled pieces, and the latter out of soft and lightly-spun materials. Owing to the grinding-down and re-manufacturing, they lose much of their elasticity and strength. They are frequently mixed with inferior wools and cotton for the formation of still cheaper cloths.

5. **Tweeds and Homespuns.**—Both these fabrics are made of rough undyed yarn, the latter being originally the name given to fabrics spun at home. Tweeds are generally harder, closer and better finished than homespuns; both are manufactured in plain and twilled

weaves, and frequently bright-coloured wools or silks are interwoven. The yarn is spun without any regard to the colour, quality, or texture of the wool, consequently it produces a textile of very mingled and rough appearance.

Beige is the name given to a very fine material made of natural undyed yarns; it is thin, with a smooth surface, and may be either twilled or plain.

6. **Linsey and Wincey.**—These materials have almost been superseded by serges. Linsey is a very hard, durable material, made of inferior wool and flax. Wincey is the Scotch substitute, being made of wool and cotton instead of flax. Modern manufacturers have introduced some very fine makes, which may be safely utilised in place of serges.

7. **Nuns' Veiling.**—This is a light, thin, open woollen material with a rough finish, which gives it somewhat a harsh feeling. It is chiefly used for children's summer and evening dresses. With care it will wash well, and for so thin a fabric is very durable. Crépon is a material of much the same texture, which has been treated somewhat like crape to give it a crumpled appearance.

8. **Grenadine, Gauze, Canvas, Net.**—These are thin, open materials, sometimes manufactured in meshes or checks. They are made of silk or wool, and frequently of silk and wool combined. In canvas the threads simply pass over one another, and can be easily displaced if desired; in nets the meshes are knotted, while gauzes have the threads much twisted. Grenadines often have a groundwork of gauze with a thick pattern woven upon it.

Flannels.—Flannel is the name given to a loosely-woven, woollen fabric, manufactured very much in the same way as cloth; it has a rough, slightly-raised pile

or nap running from right to left, and the yarn is very loosely spun to impart softness. The chief makes of flannel are Welsh, Saxony, Yorkshire and sanitary or natural wool. Welsh flannels are of a bluish tinge, rather coarse, and with a thick grey selvedge called list; originally they were made of the wool of the Welsh mountain sheep, but the amount of wool thus procured is hardly sufficient for the quantity of Welsh flannel now used. The manufacture is conducted principally at Newtown, Welshpool and Llangollen. Saxony is a very soft, cream-coloured flannel, with a pink selvedge, and is generally used for baby-clothing. Yorkshire flannel is cheaper, with very distinct threads; it is also cream-coloured, but has a very narrow bluish-grey selvedge. Sanitary flannel is of a greyish-brown colour, and is made from a specially-prepared hygienic wool, which preserves the natural properties of the wool and makes it warmer and healthier.

Several special kinds of flannels are manufactured, such as cricketing flannels, which are close and firmly spun; striped shirt flannels, thin gauze flannels for Indian wear, French twilled flannels for dressing gowns and children's clothes, etc.

Cottons.—The merit of cotton materials lies in their durability and their suitability for washing. They are also very inexpensive, and although not quite so durable as linen are much lighter to wear and easier to wash. The principal cotton fabrics are :—

1. **Calico.**—Calico derives its name from Calicut, a town in the Malabar district of India. Formerly the name was used universally for cotton fabrics with printed designs; now it is exclusively used for a white fabric, known also as longcloth. This may be bleached, in which

case it is put through various processes to thoroughly whiten it, or unbleached, when it presents a whitish-brown tint. Chloride of lime is the principal bleaching agent used, and although vastly improving the appearance of calico it is apt to decrease its strength and durability. Calico is used principally for undergarments, and is the best of all washing fabrics.

2. **Print.**—This is the name now commonly given to calico when printed in various designs and colours. The chief seats of calico printing in Great Britain are to be found in Manchester and Glasgow, where there are very large factories. Calico printing at the present day produces beautiful artistic results, which not only require chemical and mechanical skill, but thorough knowledge in the science and art of design. Print is used chiefly for dresses and aprons; it is very durable, and, if printed with fast colours, will wash well.

3. **Gingham and Zephyr.**—These are fabrics made of yarn dyed before weaving. Gingham is close and firm, with the warp and weft threads of even thickness, consequently, when made in checks and plaids, the squares are regular. Zephyr is much finer, with a thinner weft thread, thus the squares in plaids and checks are never quite even.

4. **Sateen.**—Sateen is an imitation in cotton of satin; it is soft and yielding, and made of yarn dyed before weaving. Sometimes it is printed like print, but it may be easily distinguished from that fabric, as the ground is dyed through and the colour not just laid on the surface. Plain sateens are much used as linings for thin woollen and silk material, and the better makes for dresses and aprons.

5. **Muslin.**—Muslin is the finest cotton material, and

is made in many varieties. The principal kinds are Swiss, Mull, Indian, Madras, Book, Victoria Lawn, Leno and Spotted. Indian and Mull are the finest and softest makes, the former having a special silky appearance; Swiss muslin is somewhat thicker, stiffer and much more transparent, while Madras has a coarse, transparent ground with a heavily raised pattern worked upon it in very soft, thick thread. Book muslin is like an inferior Swiss; Victoria Lawn and Leno are stiff muslins used to line trimmings and dress finishings, and spotted muslin is a sort of book muslin with raised spots worked on it. White muslins are the most common, but they may be also had in various colours and shades. Art muslin is a thin, coarse, Indian muslin printed in elaborate designs, but it is seldom used as a dress material.

6. **Piqué and Dimity.**—Piqué is a very strong, white, cotton fabric with a cord running across from selvedge to selvedge; it is very stiff and used principally for children's pelisses. Dimity is a similar material but much softer, and it is also woven into diamonds and other patterns.

7. **Drill and Jean.**—Drill is a very hard, dull, thick, cotton fabric, and jean is the sateen counterpart; both are twilled and used chiefly for sailor blouses and ladies' dresses.

8. **Velveteens, Crapes.**—See silks.

9. **Polonaise.**—A strong soft lining made of silk and cotton, used principally for silk dresses.

10. **Silesia and Linenette.**—These are the two popular dress linings; the former may be either twilled or plain, with a figured or striped pattern on one side and a plain white, grey, or black back: it is used chiefly for bodices. Linenette is a plain, highly-glazed self-coloured lining, obtainable in almost every shade, and used princi-

pally for skirts. Oxford lining is like a thick, stiff grey gingham, very heavy and difficult to make up, as it does not retain the wheel marks; its chief merits are its cheapness and strength. Silesias are also made in plain self-colours, the old-fashioned plain slate-grey being still a favourite lining.

11. **Galatea.**—An imitation of linen woven generally in blue and white stripes, sometimes also with a little red introduced. It is very strong and most suitable for dresses required for hard wear.

12. **Flannelette.**—A soft, woolly material manufactured to imitate flannel. It has a soft, downy surface, and on account of its warmth, is now becoming very general for underwear.

Linen.—Dress fabrics made of linen are not very numerous, this trade being now chiefly supported for ecclesiastical and household purposes, with the exception of such articles as shirts, collars and cuffs, laces and handkerchiefs. Besides the ordinary plain linen which is sometimes used in the place of calico, the principal makes are:—

1. **Cambric.**—This is a general name applied to thin linen, said to be derived from the French town of Cambrai, where it was first manufactured. Switzerland and Ireland now produce some of the finest makes, and it is this fabric which is generally used for pocket handkerchiefs. Scotch cambric is a good imitation made of cotton, with the fibre very much twisted to make it appear like linen.

2. **Lawn.**—The very finest linen muslin is known by this name, and on account of its expensive nature is rarely used as a dress fabric, but it can be very successfully imitated in cotton. It obtained its name from the fact that the very fine flax was originally spread out on the

better grass fields or lawns in order to bleach it, exposure to air being necessary in the earliest bleaching processes.

3. **Holland.**—It was formerly the custom to send unbleached linen from Scotland to Holland to be bleached, and this latter name is still kept for a kind of coarse, unbleached linen. It is the favourite linen dress fabric, as it is cool and durable; coloured Hollands are now being extensively manufactured, but originally they were of a dull, whitish-brown or yellow tinge.

CHAPTER VIII.

DRESSMAKING.

Bodices.

The scientific knowledge of dressmaking materially assists the practical work, and scientific systems of drafting the various parts of a dress act as good foundations to the different phases of fashion and the peculiarities of figures. But systems, however good their principles and proportions, require to be treated only as groundworks, and must be accompanied by a thorough practical knowledge of the details of making, such as cutting out, fitting, pressing, finishing, etc. A few primary points are essential to good dressmaking; such are:—

1. Accuracy in the smallest details.

2. Careful handling of the various parts, so as not to stretch them out of shape.

3. Good and plentiful tacking, and removal of the same without straining.

4. Neat sewing, coupled with firm, regular and tolerably large stitches.

If these details are not carefully observed during the process of making, it is probable that the final results will not be of the most satisfactory nature. With beginners especially, stretching various parts of the bodice whilst sewing is a very common fault, and when once

this is done it is very difficult, nay, in many cases almost impossible, to effect a remedy.

Cutting out.—Almost every system of drafting has its own special rules for cutting out, and will probably require any general principles to be adapted to its special needs. The quantity of Silesia lining required for a plain average sized bodice is two yards, and for a skirt four yards of double-width linenette. The dressmaker's method is always to cut out the bodice lining first, because the material may have to be arranged in some fancy manner according to the nature of the design; tailors, on the other hand, cut out the material first, partly because they use much thicker and firmer fabrics, and also because they usually make plain tight-fitting bodices. No definite rule can be given as to whether the skirt or the bodice material should be cut out first, as this depends entirely on the style and quantity provided. The wisest plan is to mark out on the material the various parts of the dress with tailor's chalk before cutting, so as to ensure an even distribution between the bodice, sleeves and skirt.

One of the most economical ways of placing a bodice pattern on the doubled lining is as follows:—

(*a*) **Fronts.**—Bottom of the basque to end of the lining and the fitting line (centre front) towards the selvedge.

(*b*) **Middle-back.**—Centre seam towards the fold of the lining on the portion left from the fronts (with large patterns the shoulders will require to be placed a little above the fronts).

(*c*) **Side-backs.**—Armhole placed in the small portion left from the front neck curve.

(*d*) **Under-arms.**—At the side of the side-back piece.

Note.—Most systems require the waist lines of both side-pieces placed at right angles to the selvedge, *i.e.*, lying along the weft threads.

(*e*) **Sleeves.**—Lengthwise on the remaining lining. Usually the top and bottom of the inner seam are in the same straight line, and therefore are placed equally distant from the selvedge.

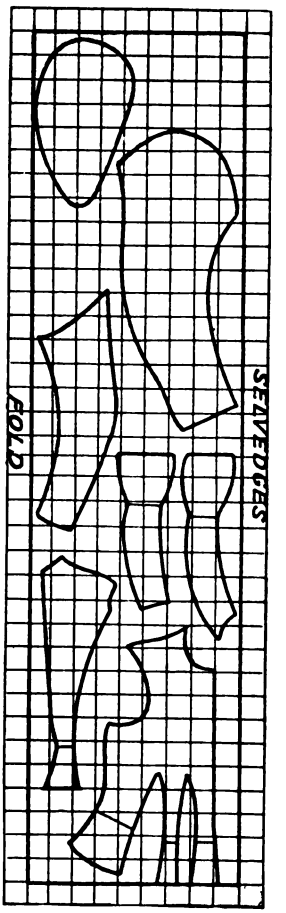


FIG. 59—Placing of Bodice Pattern on Lining (Scale $\frac{1}{16}$ in.).

FANCY MATERIALS.

A few special points must be noted in cutting out fancy materials.

1. Each piece requires to be cut separately, and not on the doubled material, as these fabrics are seldom folded quite evenly.

2. Figured and satin-faced materials must be made with the material falling all the same way.

3. Pile fabrics, when held next the wearer, must appear to shade darkly.

4. Plaids and checks must correspond both widthwise and lengthwise in every piece as follows:—

(*a*) Waist lines.
(*b*) Top of the middle and side-back seam.
(*c*) Top of the side-back and under-arm seam.
(*d*) Under-arm and front seam.

5. Stripes may be cut entirely on the cross with the lines made to fit into one another, or on the straight, when they are treated lengthwise as plaids.

Turnings.—The patterns are pinned to the material, the edges, waist lines and darts traced with a wheel, and the turnings marked in the same way as for under garments (page 37); but the amount left for turnings varies in different places, and the nature of the material must be taken into account, as firm and closely woven ones require less because they are not likely to fray.

Turnings for all parts of the armholes should not exceed half an inch; if more is left the latter become narrowed, and will not allow the dress to be put properly on for fitting. On the other hand, those for the under-arm and shoulder seams should be quite one inch deep, because if alterations are needed they are usually made in these seams.

The depth of turnings for the centre-back seam is a matter of taste, many people preferring it fairly wide, in order to fill up the natural hollow of the figure between the shoulder blades. A wide margin in the front hem is also advisable, two inches being a very favourite amount; half to three quarters of an inch for all other seams is a general average.

Tacking.—This divides itself into two classes: (1) the tacking out, (2) the tacking together. The importance of both is considerable, and if carelessly done will give endless trouble in fitting. The stitches for the first, which is merely the tacking of the lining and material

together, may be fairly large. Those for the second are required to hold the various pieces together for fitting, and must therefore be firm and close.

The following are a few elementary rules for tacking bodices :—

1. Stretch the material on to the lining and pin them well together.
2. Tack the waist lines.
3. Tack the lining to material over the wheel marks.
4. Pin and tack the bodice together (beginning at the waist lines, which must meet together exactly) in the following order :—
   - (*a*) Darts.
   - (*b*) Side-backs to centre-backs, keeping the former piece uppermost while sewing, so as to fit in the curves easily.
   - (*c*) Under arm-pieces to side-backs.
   - (*d*) Centre-backs.
   - (*e*) Under-arms to front.
   - (*f*) Shoulders, taking care to slightly ease in the back, so as to make the neck and armhole lines meet.
   - (*g*) Sleeves, beginning with the inner seam and making the two pieces meet at the elbow bend.

The stretching of the material on to the lining is an important point, and one which can be improved as the worker becomes better acquainted with the natural curves of the figure. The most stretching is required where depressions occur in the figure, and as far as possible it should be done lengthwise ; it gives the appearance on the wrong side of the lining being puckered, and this is very necessary for the hollow parts of a figure. It

also removes any chance of the material stretching and becoming full on the surface during wear. The most important places are above and below all parts of the waist, and the front neck and shoulders; in all parts the amount of stretching must be regulated according to the nature of the material, some naturally requiring more than others. The back shoulder is generally cut slightly longer than the front in order to prevent puckers round the front neck; it is better not to stretch the front shoulder on to the back, but to ease in the latter, and allow the front to stretch itself naturally on the figure. The rounding, stretching and shrinking various parts so as to exactly fit the crevices of the body are seldom needed for any but thick tailor-made garments. If desired, any great depressions may be fitted with wadding, which is usually placed between the lining and material.

Fitting.—Through the development of many good systems of measuring and drafting, the difficulties of fitting have been considerably lessened. Still, comparatively few normal figures are to be found, so that a certain amount of fitting will always be indispensable, but the fault of overfitting is not in the least uncommon. In order to prevent this, the whole fit of the garment ought to be carefully noted before making any alteration, and due allowance made for the tightening of the seams when firmly sewn. Overfitting is frequently caused by altering one part and thereby causing a misfit to another, thus necessitating further alterations, and this may be carried to such an extent as to positively change the entire cut and fit of the bodice. Therefore, in making any alteration, however correct in itself, care must be taken to see that it is not throwing some other part wrong; for example, putting the waist line in the wrong position by taking up

the shoulders, or, enlarging or lowering the neck too much by letting down the shoulders. Frequent fittings are not desirable, because the unfinished portions of the bodice are apt to stretch out of shape; with a good system of drafting one fitting ought to be sufficient, and more than two should never be permitted. This necessitates all parts of the bodice being ready at once, and after the requisite alterations are made, the positions for the collar and sleeves marked with pins or chalk. Two systems of fitting are common—one is to do as much as possible from the front fitting line, and on no account to alter the shoulders; the other is to avoid altering the fitting line and to make necessary alterations at the shoulder. Both plans have their good points, but the first is undoubtedly the more difficult, because unless great care is taken, it is apt to throw other parts, such as the darts, out of their right position. A normal figure should require a straight fitting line, the appearance of a curve being due to the suppression at the waist by the darts; for stripes and plaids this is particularly essential. Many abnormal figures, however, require a small amount taken in towards the neck, and others again require the bodice rounded over the fullest part of the bust.

Many dressmakers advocate fitting-on with the right side of the bodice uppermost on the figure; for two reasons, this is not a good method. First, the person fitted may not be equally developed, one side being larger than the other, and then when the bodice is worn on the right side, the smaller portion will be to the most developed part. Secondly, the seams take up a certain amount of room, and if these are left outside while fitting, the bodice is frequently made too tight. The boning also takes up a certain amount, but this is usually counter-

balanced by the necessary paring and pressing of the seams. For beginners it is wiser to mark all alterations with pins, and to fit both sides, so as not to alter one side too much to the detriment of the other. For more experienced workers a quicker method and one less likely to strain the bodice is to mark the faults with chalk, and if the person is equally developed only one half need be marked on the figure; but this method should only be adopted by dressmakers with quick and well-trained sight, or misfits are likely to result. Besides the altering of seams, fitting includes the removal of fulness and creases which frequently occur in various parts of the garment. The following general rules, separated into three divisions —(1) fitting, (2) alterations, (3) removal of fulness and creases—will show how to rectify the commonest faults occurring in dress bodices.

1. Fitting.

1. To ensure good fitting, correct cutting and firm, correct tacking are absolutely necessary.

2. Dispense, if possible, with more than one fitting.

3. Have all parts of the dress ready and tacked, *viz.*: (*a*) bodice, (*b*) sleeves, (*c*) collar, (*d*) skirts. (*Note.*—If desired a few back seams may be machined before fitting.)

4. Fit the skirt and arrange :—
   (*a*) Darts and waist band.
   (*b*) Length of front, hips and back.

5. Place the bodice on the figure as follows :—
   (*a*) Right side outside.
   (*b*) Pull well down at the back waist and pin to the figure.

(*c*) Pin the front fitting-lines together, beginning at the waist.

(*d*) Draw the fronts up very slightly over the bust.

6. Previous to altering any one part examine well the whole fit of the garment.

7. Avoid overfitting and, if possible, altering the fitting-lines and darts.

8. Make any necessary alterations and remove the creases according to the given rules.

9. Fit the sleeve and mark the positions for the inner and outer seams and the top of the sleeve, on the bodice.

10. Note if the neck tacking and collar agree—if not, mark alterations.

11. When fitted, all alterations must be marked at once with tackings.

2. Alterations.

1. **Front bust or waist** (width).
   (*a*) If too large or too small, take in or let out the under-arm seam; or
   (*b*) Slightly round the fitting-line over the bust.
2. **Back bust or waist** (width).
   If too large or too small, take in or let out the under-arm and side-back seam.
3. **Waist** (length).
   (*a*) If too long or too short-waisted in the back or front, take in or let out the back or front shoulder respectively; or
   (*b*) Alter the waist line to its right position by taking in or letting out each seam at the waist.

4. **Chest** (width).

   If too wide or too narrow, alter at the shoulder and under-arm seams; it may also require the armhole hollowing out. If still incorrect, alter at the fitting-lines.

5. **Back** (width).

   If too wide, take in the side-back and middle-back seam, and hollow out at the armhole.

   If too narrow, let out the middle-back seam.

6. **Neck** (width).

   If too large or too small, take in or let out at the shoulders. For round-shouldered and narrow-chested figures, the front fitting-line may be taken in from a quarter to half an inch, and the middle-back seam from one-eighth to one-quarter inch.

   Neck (height).

   If too low, raise at the shoulders and alter the position of the waist.

   If too high, cut away the material to the required place, and narrow it according to the given rules.

7. **Sleeves** (width).

   If too large or too small, take in or let out the outer seam if possible, but occasionally the inner seam also requires altering.

   Sleeves (length).

   If too long above the elbow, take away the amount at the armhole; if too long below, shorten at the wrist.

   If too short above the elbow, join extra material to the under-arm piece; if too short below the elbow, join a piece on to the wrist and cover it with a cuff or trimming.

8. **Basque.**

This is chiefly altered at the under-arm seam, but may require each seam taking in or letting out.

Note.—Avoid all alterations which will make the under-arm piece smaller than the side-back.

3. FULNESS AND CREASES.

1. **Fulness from top of the second dart to the armhole.**

Make the darts smaller and draw out the superfluous material at the under-arm seam.

2. **Fulness at the fall of arm in front.**

(*a*) Draw out the fulness at the shoulder and under-arm seam; or

(*b*) Make a small dart in the lining from the armhole, and stretch out or shrink away the material above; or

(*c*) Add wadding to fill up the fulness.

3. **Fulness at the collar bone.**

(*a*) Stretch out the material to the neck and armhole, leaving the lining loose underneath to fill up the depressions of the figure; or

(*b*) Take in the neck at the shoulders or fitting-lines; or

(*c*) Enlarge the collar, and see that its curve suits the figure; or

(*d*) Shrink away the fulness.

4. **Fulness across the fitting-line at the bust.**

(*a*) Make a small dart in the lining, and stretch or shrink away the material; or

(*b*) Draw the edges in with overcasting and shrink.

5. **Fulness at the top of the darts.**

(*a*) Slant the darts more gradually off at the top, and make them slightly longer; or

(*b*) Draw away the fulness to the under-arm seam; or

(*c*) Make the darts smaller and draw away the material to the under-arm seam.

6. **Diagonal creases from the front shoulder and neck to the armhole.**

(*a*) Take in the shoulder at the armhole and let it out at the neck; or

(*b*) Let out the front shoulder.

7. **Creases across the waist from the under-arm seam to the second dart.**

(*a*) Open the under-arm seam, stretch the bodice well down till the creases disappear, and pin it together again *on* the figure; or

(*b*) Place a small dart in the lining, and stretch the material over it.

8. **Creases across the back waist.**

(*a*) Take in the seams of the waist and let them out in the basque; or

(*b*) Raise the shoulders.

9. **Diagonal creases across the back basque.**

Undo the seams and pin them together again on the figure.

10. **Creases across the upper sleeve from the inner seam.**

Give greater depth to the under part by adding a wedge-shaped piece of material to it at the outer seam, or by shortening the inner seam.

11. **Creases across the upper sleeve at the elbow.**

Give more curve to the sleeve by taking in the outer and letting out the inner seams below the elbow.

CHAPTER IX.

FINISHING.

After fitting, the bodice is ready for stitching, and it is in this part that the beauty of the lines may be made or marred. All the seams should have the appearance of being curved, especially well into the hollow of the waist, but the curves must not be abrupt, but graceful and gradual. All back seams should slope to the centre of the back waist, and the front ones to the centre of the front waist. The stitching may be done by hand or machine; if by the former, the threads must be drawn sufficiently tight to prevent the join dividing on the right side: for machined seams, the tension must be sufficiently loose to allow for the thickness of the material, or it will appear puckered, and the stitches crack and break in wear.

The seams may be made neat in two ways: either by overcasting, or by binding them with sarcenet ribbon or galloon. The width of the seams when finished varies in different parts of the bodice, according to the nature of the figure. For angular figures it is important to leave them fairly wide where depressions occur, as for instance, down the centre of the back and the front shoulder; they thus act in the place of padding by filling up the hollows. The under-arm seam is also usually left a little wider than the others in case the bodice requires to be altered

during wear, but with these exceptions a half-inch for turnings may be considered an average width. Each turning is laid open and notched across at the waist to within an eighth of an inch of the seam; curved seams may also require one or two notches above, in order to make them lie quite flat. The cotton for overcasting, or the binding if used, should match the material in colour.

Pressing.—The importance of this branch of dressmaking work cannot be too particularly emphasised; it is in this that amateurs generally fail, and tailors score over the average dressmaker. The tailor's goose or iron is useful for long seams, but it is not necessary for ordinary dressmaking, and most workers prefer a large flat iron. Good heavy pressure in ironing is very essential, and for thick materials this must be assisted by moisture. To damp seams, dip the tips of the fingers in water and draw them gently along the open seam; on no account wet, but merely damp, the seams, or the material will shrink and pucker with the heat of the iron. Soap rubbed along the seams will help to flatten them and also give a certain amount of stiffness, but with some aniline dyes the alkali of the soap fades the colour. Ironing, as far as possible, is done on the wrong side; should circumstances, however, necessitate it being done on the right side, a piece of loose material similar to the dress is placed over the part to be ironed. Where fulness has to be removed, this piece of material is damped and a well-heated iron applied, so as to shrink away the superfluous material by the contact of heat and moisture. This process will cause the surface of the garment to become glossy, but the nap may again be raised by steam; to do this, lay a damp cloth over the glossed surface, and hold a very hot iron as near to it as possible without actually

touching it, and the steam thus produced will raise the nap. If this should not prove thoroughly successful, rub the glazed surface very gently with a damp cloth before steaming. For pressing seams, the iron must not be drawn along as in ordinary ironing, but lifted and laid down over every portion, in order to prevent the seams being stretched by the toe of the iron. The object of pressing is to give a neat and smooth appearance through flattening creases, seams, stitching, etc., by means of weight, heat and moisture; time spent over this part of dressmaking will amply repay the worker.

Fastenings.—Standard dress fastenings are :—

1. Buttons and buttonholes.
2. Hooks and eyes.
3. Hooks and eyelet holes or loops.
4. Lacing.
5. Studs with eyelet holes or buttonholes.

Buttons and buttonholes are the commonest and firmest method of fastening; the buttonholes are placed on the right-hand side of the bodice, from half to one inch apart, according to the size of the button. The rounded and outside edge should come to the fitting-line, the front hem being turned back one-eighth to one-quarter of an inch beyond it. The front hems may consist either of the bodice turned back and slip-hemmed, or of a false hem laid on of silk; with thin materials it is wiser to strengthen it by slipping in an interlining of tailor's canvas. The buttons placed on the left-hand side require a stand to lie under the buttonholes when fastened; this stand is usually left about one inch wide beyond the fitting-line, and is hemmed or faced back to match the buttonhole side. The first button and buttonhole should be placed on the waist line, and the distance

apart measured from the same point. This is very important, as it ensures the buttons and buttonholes being exactly opposite; if the contrary is allowed it causes the bodice to twist crookedly when worn. The hems ought to be well pressed before making the buttonholes and sewing on the buttons.

For fastening with hooks and eyes, both sides of the bodice are turned back about one-eighth of an inch beyond the fitting-lines, the hooks and eyes stitched on about three-quarters of an inch apart, beginning at the waist, and then covered with a facing of silk or binding. In sewing on the hooks and eyes care must be taken not to let the stitches appear on the right side, and yet at the same time to take them through the double thickness of lining; if preferred, a hook and eye may be placed alternately at each side of the bodice. A stand is made on the left-hand side by sewing in a fold of material. Fastenings with hooks and eyelet holes or loops require the hooks to be put on the right-hand side in the same manner; the left-hand side is prepared as for buttons, and the eyelet holes or loops are placed on the fitting line in their stead. Hooked fastenings of any kind are usually only employed for trimmed bodices. Lacing is used chiefly for evening bodices and Swiss belts: both sides of the bodice are prepared alike, the edges being turned in one-quarter to three-eighths of an inch beyond the fitting-line; these margins are usually machined down, and narrow bones slipped in to stiffen the edges. Rows of eyelet holes are made on the fitting-lines about one inch apart, beginning at the waist, and the bodice is drawn together with a silk lace through these holes.

Studs with eyelet or buttonholes are now commonly employed for unlined cotton blouses. The depth of the hem

must be first decided, and the material turned back *half* the depth of the hem beyond the fitting-line; this, as in the case of an under bodice, is to bring the fitting-line exactly in the centre of the hem when finished. The eyelet and buttonholes are placed on the fitting-lines, the buttonhole on the right-hand side being placed longitudinally along the warp threads, and those on the opposite side horizontally across the weft threads in order to hold the stud more securely. Two or three fastenings of this kind down the centre of the hem are usually considered sufficient.

Boning.—Bones are used to prevent the bodice stretching and to keep it a good shape; the bones should be flexible and thin so as to yield well to the figure, and although many substitutes exist, nothing has yet been found quite equal to real whalebone. Substitutes are made from horn, quills, vegetable fibres, steel, vulcanite, etc., but all of these more or less lack the spring of real whalebone, and consequently break more readily; some feather boning perhaps may be excepted, as it is very strong and durable, and also has the advantage of being able to be machined into the bodice, but it is somewhat thicker than whalebone, thus adding something to the bulk of the dress. The best and most correct way of boning is to sew in casings of binding or biassed cut linen to every seam. The height of the bones should be on a level with the top of the darts all the way round; occasionally those put in the side back seam are carried up to the armhole, especially for evening bodices, but for dresses in daily wear the bones, if made too high, are apt to work through to the right side. The bindings are sewn on to the turnings of the seams only with running, hemming or herringboning; at

the top, a small loose pocket is made by doubling the binding for about an inch and sewing the sides together. The binding is eased on all the way down, and for about one inch above and below the waist it should be distinctly puckered, as here greater fulness is required. For short basques, the binding is carried to within a quarter of an inch of the edge; this small amount is left to prevent the bone working through at the bottom. Long basque bodices do not need the bones taken all the way down, but the length must be determined according to their shape and style. The bones may be put into the casings from the top or the bottom, according to individual taste, but if from the top, the pocket must not be made till the last; and for long basques where the boning is not carried down to the bottom both ends may be finished with a pocket. The easiest plan is to put the bone in from the bottom, cutting them fully half an inch longer than the required length and pushing them well up into the fulled binding, so that the bodice may be well stretched; a hole must be pierced through the bone with a stiletto or large pin at either end for fastening them in. The top end is finished with a fan of stitches worked through the hole over the pocket, the object of the pocket being to prevent the end of the bone showing on the right side, as it would do if sewn down to the seam all the way. At the bottom the binding is turned in and sewn with the bone to the turnings of the seam.

Basques.—The basques are shaped in various styles according to the prevailing fashions, but the edges are nearly always turned up with a facing of silk, binding, or material. Pointed basques appear to give length and to decrease the width of a figure, provided the point is sharp and not rounded, otherwise it will have a contrary effect.

After the style of the basque has been marked with pins or chalk, it is tacked back from the right side, and care should be taken not to stretch the edge or to square it at the seams; the edge should present one unbroken line when finished. After this the material may be cut away to within a quarter to half an inch from the edge, and faced with biassed material or binding; this facing is hemmed at each side without the stitches being taken through to the right side. In order to see that both sides are alike, measure down at intervals from the waist line.

Collars.—Shaped collar stiffening, or buckram shaped according to the system of drafting employed, forms the foundation of a collar. This is covered with material cut about a quarter of an inch larger all round, and with the warp threads running straight down the centre of the back; this material is first tacked to the stiffening along the centre, and then drawn together with long stitches taken from edge to edge on the wrong side. Two or three hooks and eyes are next placed at the ends for fastening, and these must be put sufficiently far in to close the collar when fastened, and not allow it to gape. It is easier to sew the lining to the top and ends of the collar before putting it on the dress, and this is done by turning it in once and slip-stitching, or hemming it on about one-eighth of an inch from the edge of the collar; the lining at the bottom is left loose to allow the dress to be put inside. Before sewing on the collar, first pin and then tack it in the proper position from the *right* side, taking care to bring the ends only to the fitting-line at either side, and no farther. The material beyond the fitting-line on the buttonhole side is simply drawn together and put into the edge of the collar; that on the button side is

left loose from the collar and the edge buttonholed or bound over. The collar is sewn on from the wrong side, and the material of the dress at the neck drawn well *up* and the lining underneath eased *down*, so as to prevent a full appearance on the right side. After sewing, the turnings will require paring and notching, to prevent them straining under the collar, and finally the collar lining is hemmed down over the first stitching.

Sleeves.—Sleeves consist of two parts, known as the upper and under pieces; in coat sleeves the difference in width between them is very slight, but for dresses the under piece is considerably smaller, partly because they fit more closely to the arm, and also to make the under seam less visible. The two parts are joined by two seams known as the inner and the outer seams; in joining them it is very important that the under and upper pieces should exactly meet one another at the armhole and wrist, and any surplus material which usually appears on the upper piece at the outside seam is gathered and placed at the elbow to give greater freedom of movement. When placed quite flat on a table, the inner seam of a well-shaped sleeve will always lie evenly to the inside edge, and not turn under or over towards the wrist. Rules for placing sleeves into the bodice are numerous, but owing to the number of abnormal arms they can very seldom be followed. The inner seam should be placed exactly where the arm separates from the body in front, and one rule for determining this point is to measure along the armhole from the shoulder towards the back one inch; from this place fold the armhole in two exactly, and the bottom of the fold will give the right position. Another rule is to place the outer seam in the centre of the armhole of the side-back piece, and a third is to put

the inner seam one inch above the bust line. Undoubtedly the most satisfactory plan is to mark the right position while fitting, noting at the same time that the inner seam points in a straight line from the armhole to the thumb when the arm is held out as for measuring; if it twists above or below the thumb at the wrist, the sleeve is either placed in a wrong position on the bodice, or else it is badly shaped, and must be altered according to the rules previously given.

Waistbands.—A waistband, made generally of belting, is sewn on to the three back seams at the waist, with upright rows of cross-stitch to keep the bodice well down on the figure.

Loops for hanging up are placed in the armholes or collar.

CHAPTER X.

SKIRTS.

SKIRTS may be roughly divided into three classes: (1) housemaids', (2) lined or walking, (3) draped. All well-fitting skirts should

(*a*) Hang evenly round the bottom;

(*b*) Fall slightly out so as not to cling round the feet;

(*c*) Have the seam appearing to fall in a straight line from the waist downwards;

(*d*) Fit at the hips without strain, and with sufficient room for the figure to bend easily.

The processes of making naturally vary very much with the fashions; the following is the most general plan:—

1. Tacking-out and joining seams.
2. Overcasting and pressing.
3. Placket-hole.
4. Making and putting on waistband.
5. Bottom facing or hem.
6. Pocket, loops, braid, etc.

Before cutting out skirts, the principle and nature of gores must be understood. A gore is a piece of material having its width narrowed from the bottom to the top; strictly speaking, one side should be on the straight of the material and one on the bias, but the idiosyncrasies

of fashion frequently cause this rule to be ignored. Skirts are cut with one, two, or even three gores on each side—the straight side of each width falls to the front, and is thus brought next the slanting side of its neighbour. If the back width of the skirt is also gored, two slanting seams must fall together, and this is not advisable, as bias-cut material stretches very easily; by joining a straight or selvedge edge to a cross one, the former being stronger supports the latter, and prevents it stretching as readily. As gores are placed at each side of a skirt, they must be cut in pairs, or the straight edges of the one side will fall to the back instead of the front. For this reason it is frequently more economical to cut out the skirt before the bodice or sleeves, so as to utilise any pieces which may be left from cutting the gores.

The object of goring is twofold:—

1st. To reduce the weight by taking out all superfluous material.

2nd. To improve the appearance and comfort by

(*a*) Decreasing the fulness at the hips and waist;

(*b*) Increasing the fulness at the bottom.

Skirts should never measure less than two and a half yards round the bottom, and they sometimes are as much as five yards, but more than that for an average figure cannot be called graceful.

1. **Housemaids' Skirts.**—Usually these skirts are made of print; they may or may not be gored, but they are never lined. They can be cut from four widths of thirty-inch print, one being for the front, two for the side gores and one for the back; it is possible, however, with reversible material such as gingham to cut a very fair skirt out of three widths—one for the front, one for the two side

gores and one for the back. If a wide skirt is desired, two widths may be put in the back, or if reversible, the side pieces cut to make two gores at each side. The widths are cut with one to one and a half inches for hollowing at the waist, and sufficient for a hem or facings at the bottom added to the actual length of the skirt. Front widths are narrowed at the top three or four inches on either side, or else to half of the bottom width; side

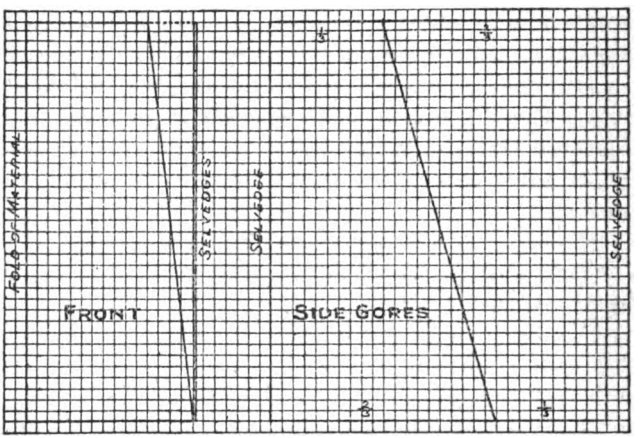


FIG. 60—Housemaid's Skirt.

gores may be narrowed one-third their width at the top on one side only, or if cut into two gores, with one-third of the width at the top and two-thirds of the width at the bottom. In making, begin by joining the pieces together, taking care that they meet exactly at the top. Some workers join these seams with French or mantua-maker's seams, so as to leave no raw edges on the wrong side; others again prefer stitching or machining them after-

wards, and overcasting the edges so that the seams may be laid open. If the skirt is joined to the bodice, the placket-hole or opening is put in the seam nearest the front on the left-hand side; but if it is put into a separate band, the seam nearest the back on the left-hand side is chosen. For the former the right-hand side of the opening (eight to ten inches long) is faced with a false hem about one and a half to two inches wide; on the left-hand side a double fold is laid to lie underneath the right-hand hem. This is cut about four inches wide and back-stitched on to the right side, turned over on to the wrong, and the edge slip-hemmed down to the wrong side just over the first row of stitches. When, however, the placket-hole is placed towards the back, the side of the opening nearest the centre of the back (that is, the right-hand side when viewed from the back) is faced and the double fold put opposite, because whether fastened from the front or the back, all women's clothing must fasten from right to left. The fulness at the top is gathered slightly all round the front and over the hips, and the remainder gauged or gathered into the back, which should be from four to six inches wide when finished. When the dress is made in one the band is placed all round the waist of the bodice beginning at the button stand, and an extra portion is carried beyond the buttonholes to the left under-arm seam. In front, the centre of the skirt is placed to the centre of the band, and the portion on the left as far as the placket-hole is put into the loose portion of the band; the remainder of the skirt is joined to the band from the left under-arm seam, round the back to the centre front. This will leave the front left-hand side of the bodice loose from the skirt, and a button and buttonhole must be put on the bodice and skirt bands

to prevent it slipping away during wear. When the skirt is made entirely separate from the bodice the back width is gathered closely, and the front and hips eased or slightly gathered into the remainder of the band. After completing the band the correct length is measured down, and the bottom turned back and tacked from the right side in order to keep it even and well rounded. The wrong side may be faced or hemmed; if the former method is adopted, the facing must be cut on the cross, and will look better if it is made of the same material as the skirt. The facing may be hemmed on at both edges, or machined to the bottom, turned back and machined or hemmed at the top. The bottom is finally finished with a braid; it is wiser to first shrink the braid by plunging it into boiling water and then allowing it to dry thoroughly. It is folded in two and back-hemmed on to the wrong side, with the fold about one-sixteenth of an inch beyond the bottom edge of the skirt.

II. (1) **Lined or Walking Skirts.**—Lined skirts are the most popular of all, partly because they are simple to make as well as comfortable to wear. They are lined with silk, linenette, alpaca, etc., and on account of the extra bulk of the lining are almost always gored. The amount of the goring varies considerably every season, but an average width round the bottom is three and three-quarter yards. Three kinds of gored skirts may be noted: (1) woollen, or double-width material, (2) silk, or single-width, (3) girls'. On an average, three widths of double-width material are required for a walking skirt, one for the front, one for the side gores and one for the back. The front width at the top is gored on either side one-quarter of its width, thus the top will measure half as much as the bottom. Each side gore will take half of the second

width, and a half or a third of this is gored off from the top. If a wider skirt is desired, this width of material may be opened and gored like a housemaid's skirt by cutting it into two gores, each measuring one-third of the width at the top and two-thirds of the width at the bottom. When the material is non-reversible, two widths will be required for these gores, and the material cut off from them may be utilised for the bodice. The back width is sometimes narrowed a little on either side at the top, or again sometimes cut in two, and one-third narrowed off each piece in the centre at the top, thus bringing one biassed-

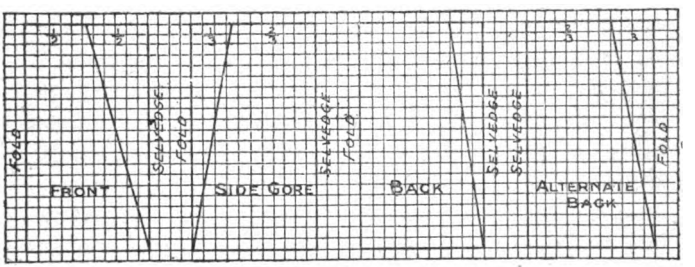


FIG. 61—Walking Skirt of Double-width Material.

cut seam down the middle instead of two on either side of the back. In taking the measurement for a walking skirt, it is usual to take the front from the waist down to the ground, and then deduct two or two and a half inches. The slope from the back to the front waist varies from one and a half to three or even four inches according to the amount of goring.

After the skirt has been cut out, the material is pinned well to the lining, and unlike bodices must on no account be stretched. If the bottom is to be stiffened, the stiffening (horsehair, wirine, canvas, muslin, etc.) is laid on to

the lining underneath the material from six to ten inches deep—more than this will make the skirt too heavy. Sometimes the stiffening is machined to the lining, but as that makes it difficult to remove if it should lose its stiffness, it is more usually lightly sewn with the hand. The material ought to be well baisted to the lining, not only round the edge, but also down the centre of each piece, and this is most easily done if laid flat on a table with the material uppermost. The seams are next firmly tacked or baisted together, bringing them even at the top, and any unevenness at the bottom is rounded off when the skirt is turned up; for beginners, it is advisable to rule a line with chalk down each seam exactly where the sewing is to be done. Care must be taken not to stretch the bias seams, and in order to avoid this, the pieces should be tacked while still on the table, the seams being first pinned and the edges tightly held. *If securely tacked* all the seams may be machined from the top downwards, so as to let the stitches strain in the same direction; otherwise, the straight edge must be uppermost to prevent the bias side stretching. The lining and material are sometimes joined separately; this method involves a considerable amount of extra trouble, as it necessitates the bias seams of the material being strengthened with galloon or narrow strips of linen, and also each seam requires the turnings to be sewn to those of the material before finally joining up the back. This last seam is made in the material only, and the lining slip-hemmed on to it. Skirts thus made look decidedly neater when finished, but, unless the worker is experienced, she will find great trouble in making the lining exactly the same size as the material. Darts at the waist in the front and side gores are a matter

of fashion; in no case should they exceed four inches in length, and they should seldom take in more than one and a half to two inches at the top. If carried down too far they cause the skirt to bulge and appear full below; they may be either curved or slanted as the figure requires, and two in the front width and one or two in each of the side gores are generally sufficient. The side seams nearest the front are frequently taken in at the top after the manner of a dart, but the amount thus taken is usually graduated off down the seam in a curve over the hips about six or seven inches long. When darted, the front and side gores of these skirts should measure the exact size of the waist; when eased very slightly on to the band, this will bring the side-back seams well under the pleats or gathers at the back. With pleated backs the skirt must be well gored, so as to fall well out at the bottom like a fan, and not be clumsy and thick at the waist. To ensure the darts and fulness being well arranged, it is better to fit them on the figure before the final sewing; at the same time the length of the front hips and back should be marked, as many persons need the hips longer or the back shorter than the front. All the seams and darts require good pressing; thick materials may possibly need damping, but it must be very slight or the material will shrink and pucker on the right side. Before pressing, the seams are laid open, pared to about half an inch of the stitching, and the edges overcast. The skirt is sewn to the lower edge of the band on the right side, and then made neat by a covering of the same material or binding. Two mantle hooks and eyes and two loops for hanging up complete the waistband. The bottoms of these skirts are better faced than hemmed,

as they lie flatter; unless very thick, the facing is made of the skirt material, partly for appearance, and partly because the material wears better than the cotton lining, besides allowing dust to be more readily removed. All such facings are cut on the cross, or else rounded to the shape of the skirt; but as the latter takes a great deal of material, the former plan is usually adopted. The top and bottom edges of the facing are turned in once and well pressed, and, after the skirt has been measured, tacked back the right length and pared, it is tacked on the wrong side about one-eighth of an inch from the edge of the skirt. Then both edges of the facing are slip-hemmed, and if the skirt is much gored, the top edge will require a few small pleats to make it lie evenly and smoothly. When the bottom is finished, it should present an unbroken circular line, and in tacking back the edges it will materially help the worker if this line is first drawn in chalk. This line has, however, occasionally to be broken with full-pleated backs, because the under part of a pleat requires to be shorter than the upper. In order to test this, place the skirt on a dress stand, and when the bottom edge is looked at *from underneath*, the portions which hang longer than the top of the pleat must be shortened to the same length. Thus, when viewed from below, the bottom edge must appear the same length, although when the skirt is laid open it will seem to be uneven. The effect when worn will be regular, and if the pleats are not shortened underneath, their edges will cut and wear out very quickly. The bottom must be well pressed when finished, and the edge braided as in a housemaid's skirt.

(2) **Silk or Single-width Skirts.**—Owing to the narrow width of silk and similar materials, the skirts

must be cut differently. Usually silk is only used for evening and house dresses, consequently they are made a little longer, from one to one and a half inches only off the ground. If made with trains, they must be sufficiently wide to flow easily at the feet; the train generally forms part of the back widths only, the adjoining side gores being sloped very slightly towards the back to meet it, but when on the figure, the hips and sides must not appear to be any longer than the front. Plain gored silk skirts require at least five widths, one for the front, two for the sides and two for the back.

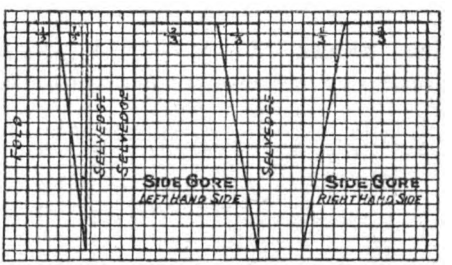


FIG. 62—Skirt of Silk or Single-width Material.

The front widths are narrowed at the top to half the width at the bottom. The side widths, if reversible silk, will cut either into two gores for each side (keeping the usual plan of dividing the widths into one-third at the top and two-thirds at the bottom) or into one for each side by sloping off one-third or one-half the width at the top. The back widths may be straight, or gored like the sides, or a few inches sloped off from the top to halfway down the sides (at one edge only) and joined on to the lower half, making a small wedge-shaped gore like

those used for nightdresses, chemises, etc. The bias edges may be joined together for the centre seam, or the centre may have the two selvedges joined, and the bias sides joined to the side gores. Silk skirts are lined with glacé silk, polonaise, sateen, etc.: they should be sewn with silk or lustre thread, and for very thin material an interlining of leno or stiff muslin, put in the back widths, adds greatly to the general appearance. Velvets, velveteens, etc., are cut on the same principles, only as the pile will not bear reversing, more widths will be needed to cut the gores: all further processes of making these skirts are precisely the same as for double-width materials.

(3) **Girls' Skirts.**—For girls aged from twelve to fourteen years two widths of double-width material are

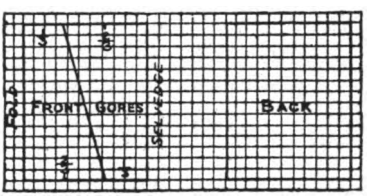


FIG. 63—Girl's Skirt of Double-width Material.

sufficient. One width cuts the front and side gores by sloping off two-thirds at the top and one-third at the bottom of the doubled material. The selvedges of the gores (if reversible) are joined to the front, and the other width of material is joined to the bias sides for the back. The back may also be gored if desired, but for hard wear the straight width will prove more satisfactory; if the material is very strong and thick only the front and side gores need be lined. For younger girls the two widths

are frequently joined together without goring; all girls' skirts should be made with natural hems so as to make provision for growing. They are also usually joined to the bodice, the top being gathered all the way round, but as much of the fulness put to the back as possible. If the bodice is fastened down the back the placket-hole is made to correspond; otherwise, it is finished off like a housemaid's skirt.

III. **Draped Skirts.**—At the present time draped skirts are practically obsolete; they consist of a loose foundation of silk, alpaca, sateen, etc., with the dress material draped over it. The foundation is cut in the same way as a housemaid's or girl's skirt, and when finished, should not measure less than two and a quarter yards, and not more than two and three-quarter yards, round the bottom. The right side of the bottom is either faced with material, or covered with kiltings or frills over which the draping falls. The allowance of material for a kilt is two to two and a half times the amount required when finished, and about one and a half times for a frill. No general rules can be given for draping; personal skill and artistic taste being the most important adjuncts to its success. The fall of any folds which may form part of the draping adds to or detracts from the appearance of the wearer; for instance, folds across or round the figure give width, folds down (*e.g.*, lengthwise) add to the height, while diagonal or cross folds add to both width and height. Draping, unless well and artistically done, will never improve the appearance of any figure, but *when* successfully accomplished it may be the means of screening many abnormal deficiencies.

Pockets cannot be omitted from the making and cutting of skirts. There are two principal shapes: (1)

bag- or sack-shaped, (2) pear-shaped. Both are made of lining; usually sufficient is left for them from the two yards supplied for the bodice. Linenette and dark coloured linings ought not to be used, as the dye will rub off on to the contents of the pocket; therefore, for dark-coloured dresses, bodice lining is undoubtedly the best, as the light side may be placed to the inside, and the black side will not be conspicuous next to the skirt lining. For the bag-shaped pocket a piece of lining about twelve inches long and a few inches wider is required. This is folded into two widthwise, and from

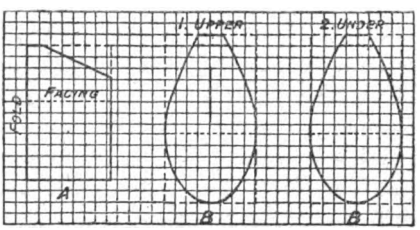


FIG. 64—A, Bag-shaped; B, Pear-shaped.

the top a small portion is sloped off from about one or two inches from the fold to two or three inches down the outside edge. The inside of the pocket at the top is faced with a piece of dress material about four inches deep in the centre, and then the sides and bottom are joined together with a French hem. The pear-shaped pocket, so called from its resemblance in shape to the fruit, consists of two pieces of lining, twelve to fourteen inches long and eight to ten broad. The bottom of each piece is rounded and the sides sloped off at the top, which should only be left about two inches wide. *One* piece has a slit down the centre four to five inches long and

about two inches from the top; each piece is faced about half-way down on the inside with material (the slit is also made through this facing). The two pieces are joined together *all* the way round with a French hem, taking care that the first row of stitching is done with the inside of the pocket uppermost; the second row is done after the pocket has been turned on to the wrong side through the slit. Both pockets are placed on the right-hand side of the skirt under a fold, and as far back as possible, about three to four inches below the waistband. Unless altogether inconvenient, in which case a slit is made in the skirt, it is put in a seam, which must be opened sufficiently far for the hand to pass through comfortably. The pockets are sewn in from the wrong side of the skirt, the inside of the pocket opening being placed to the right side of the opened seam. The slanted top edge is the part thus sewn on the bag pocket, and the small straight part at the top is finally made into a box pleat and sewn well together, but not down to the skirt. The slit of the pear-shaped pocket is the portion sewn into the skirt, and this must be the same size as the opening in the seam. Pockets are best sewn in by hand, the seams well overcast, and the top secured to the waistband with tape. If the pocket has been properly faced and put in the lining will not be visible from the right side.

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